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THE EARLY DAYS OF ANÆSTHETICS IN VETERINARY SURGERY—A RETROSPECT.

(*Continued from page* 36.)

BY E. WALLIS HOARE, F.R.C.V.S., CORK.

FROM the year 1848 to 1850 we find little or no records of the employment of chloroform in the pages of the *Veterinarian*.

Cases are, however, recorded in July, 1850, by Mr. Glover, of York, and by Mr. Stanley in September, 1850.

In January, 1857, under the heading of "Crimean Reminiscences," an anonymous correspondent records an operation for the removal of a large scirrhus growth from the scrotal region of a stallion pony, performed under chloroform. This operator speaks highly of the benefits of the anæsthetic, and advises slow administration and a liberal supply of air.

From this date we find but little reference to the subject of chloroform on consulting the index of the *Veterinarian*.

A good deal of attention was directed to the subject of local anæsthesia by the use of the æther spray, but the results did not appear to have been satisfactory.

On consulting the volumes of the VETERINARY JOURNAL, the first of which appeared in July, 1875, we find that its worthy founder and editor on every opportunity urged the advantages of anæsthetics in veterinary surgery. During his long and honourable connection with this JOURNAL, Dr. G. Fleming always put forward the claims of the lower animals and their merciful treatment by man, not only in theory, but also in practice, and the advocates for the humane treatment of animals must ever keep in remembrance his worthy and laudable efforts in this direction.

We have completed our retrospect on the subject of

anæsthetics, but can we conscientiously state that our knowledge has increased in the present day as compared with the past? No doubt from time to time practitioners have paid special attention to the subject, and demonstrated the safety and utility of chloroform and æther in veterinary surgery, but it is absurd to imagine or to state that their use is general in the present day.

The most painful operations are still performed without any anæsthetic, and the most trivial objections are put forward by those who either from ignorance or prejudice disregard the sufferings of their patients.

Can we imagine anything more abominable than the operations performed for quittor in the horse, without the use of an anæsthetic? Here the most sensitive portion of the body is subjected to the knife and the cautery, or the horny laminæ separated from the sensitive foot, the pain manifested by the patient being positively sickening to anyone endowed with the ordinary dictates of humanity.

And let us inquire what little extra trouble and expense it would require to place this patient under the influence of chloroform. Take at the most four ounces of methylated chloroform at the rate of 2s. 4d. per pound, for the entire operation; the time expended does not merit consideration; and as to the risk of fatal consequences, we still await statistics of even a single accident, where the drug is administered in a common-sense manner with a proper supply of air.

Of course, if a horse is semi-asphyxiated by an improper apparatus, and, in addition, large quantities of the drug are administered, we cannot be surprised if now and then death occurs, or, what is far more common, a serious state of narcosis is induced, which necessitates prompt measures, in order to bring back the patient to consciousness.

Those who have experimented largely with chloroform in horses, know full well the marked resistance that some of these animals possess to the toxic effects of this drug.

But other horses are affected in a far different manner, and show serious symptoms of asphyxia if an excess of the drug be administered without a due proportion of air.

The chief error that administrators fall into is the giving of large doses at one time, and the irrational idea that it is necessary to semi-asphyxiate the horse before anæsthesia can be produced.

Practical experience demonstrates that the administration should be gradual, and that a proper supply of pure air should be allowed. Death as the result of a toxic dose of chloroform

in the horse, is always due to asphyxia slowly induced, thus differing from dogs and human beings, in whom it sometimes happens that in the early stages of administration a condition of *neuro-paralysis* occurs, signifying sudden failure of circulation and respiration.

Speaking from practical experience, I can state that since adopting the Improved Chloroform Inhaler, made by Messrs. Krohne and Sesemann, I have not had the slightest difficulty or anxiety in inducing anæsthesia.

This experience extends to animals of all ages and for all operations, and I cannot record a single case where any serious symptoms occurred.

The time and amount of the drug are reduced to a minimum, and the operator has perfect control over the administration, so that an excessive amount cannot possibly be given.

It is with pleasure that I am enabled to draw attention to the marked favour which the owners of horses display towards the use of anæsthetics. In every instance they express their entire satisfaction with the results, indeed, in some instances, they will insist on the employment of chloroform.

But this is only as it should be; people would refuse to allow painful operations to be performed on themselves without an anæsthetic being employed, then why should not they have a similar regard for their animals?

It is not because many veterinary surgeons, either from prejudice, ignorance, or in order to save themselves a little extra trouble, will be satisfied to operate on animals and subject them to severe and prolonged pain, that the owners of these animals will tamely submit to such treatment.

Let them once see an operation performed under chloroform and it will be useless for those so-called practical men who boast so frequently of the expeditious manner in which they perform operations, to persuade them that anæsthetics are eitheir useless or dangerous.

We do not hear human surgeons boasting in public places of their skill and expeditiousness in performing operations. But such occurrences are frequent in the veterinary world, whenever the subject of chloroform happens to be mentioned.

Such men, it is hardly necessary to mention, are usually rigid economisers of truth, and talk in a sarcastic manner of a subject on which they are ignorant. But boasting and ignorance always go hand in hand, and prejudice is a frequent companion of both. We look forward to the day when the

use of anæsthetics will become as general in veterinary as in human surgery, and when the owners of animals will demand their employment as a right.

In conclusion, I would wish to draw attention to an excellent and instructive paper on "The Chloroform Question," by Dr. Lauder Brunton, which is now appearing in the *Lancet*. It will well repay perusal by all practitioners who are interested in the subject, as it embodies all that is known by the highest authorities on the question of chloroform, from both experimental and clinical sources.

ESSAY ON ANÆSTHESIA.*

BY MR. T. R. MULCAHY.

(*Continued from page* 32.)

Chloroform is chemically trichloromethane, and belongs to a series of products obtained from marsh gas, by substituting a molicule of chlorine for one of hydrogen, all of which have anæsthetic properties. The methylated form is most used in veterinary practice on account of its cheapness, and answers the purpose just as well.

The susceptibility of individuals, even of the same species, varies so much, that it is most important that the administrator be able to identify the different phenomena that may appear during the inhibition of the drug. The principal action of general anæsthetics, as before stated, is on the central nervous system, and it is divided into three stages. The higher centres are first acted on, and upon this depends the safety of these drugs.

First Stage.—This may be called one of stimulation, and it will be observed that the first effect of chloroform and its congeners is always one of stimulation. The cells of the cerebral convolutions are first acted on.

Stimulation of these cells causes excitement, but accompanied with more or less confusion. In the human subject the senses are at first exalted, but speedily become dulled. This is not so easily recognised in animals, but may be identified in the dog by the animal uttering sharp yelps of a delirious character.

Muscular stimulation is also induced; this is of shorter duration in the case of chloroform than of ether, and is attributed partly to the actions of the drug on the convolutions, and partly to stimulation of the muscular centres.

It may be diminished by the previous injection of morphia.

* Read before the Edinburgh Veterinary Medical Society.

It must be remembered, however, that morphia depresses the heart and also prolongs narcosis.

Consciousness gradually becomes diminished, respiration is quickened, but the act is not so powerfully performed. The pulse also becomes more rapid, and perspiration may break out over the body; this, however, may be present from the first, if the animal has been cast.

The sympathetic is stimulated and the pupil dilates slightly. As chloroform first stimulates and then depresses, and as it acts first on the higher centres, the centres in the cerebrum are depressed, while those in the medulla are being stimulated. Hence we notice acceleration of the pulse and respirations with diminished consciousness.

Second Stage.—This is one of depression and goes on to arrest of function. Consciousness ceases and the patient seems to be in a heavy stupor. Ordinary methods fail to produce reflex stimulation.

The paniculus in the horse no longer responds to the touch of the hand. The reflex and so-called automatic excitability of the cord and medulla become depressed, and hence the parts governed are disordered. The voluntary muscles become relaxed, but the pregnant uterus still continues to contract. This circumstance adds to the value of these agents during painful parturition. It may here be added that chloroform will often cause relaxation of the "os uteri" when all other methods have failed.

The pupil contracts gradually and fully, due to depression of the sympathetic. The respiratory centre becomes depressed, causing slow, shallow, noisy, and laboured breathing. The cardiac centre is also depressed, and, as a result, the pulse becomes slow and weak. This is the time to operate if the operation be a severe one (the administration of the drug being discontinued), but for slight operations it is not necessary to go so far. As before mentioned, some say the time to operate is when the conjunctiva refuses to respond to the touch of the finger. I should most certainly never advise pushing the drug so far as this, as it must necessarily be beset with great danger.

Consciousness, at this stage, is completely arrested, but the vital centres in the medulla being lower, are merely depressed, and this depression is within safe limits.

In the dog, vomition may occur after the stage of excitement; if it should, the mouth must be emptied, and care must be taken that none of the ejecta finds its way into the trachea.

The phenomena of the second stage are transient if the administration be discontinued; therefore, it may be necessary to apply some more chloroform if the operation be unfinished: for this purpose the operator should always have an assistant.

Third Stage.—Beyond the second stage anæsthesia is extremely dangerous. The third is marked by complete loss of excitability of the medulla and cord, and thus the vital functions are depressed beyond the limits of safety. Respiration is almost arrested, and the effects of the drug are thus complicated by the presence of much venous blood in the system. The pulse becomes very weak and fluttering, the cutaneous vessels dilate, and pressure is reduced to *nil.* The lower centres governing the sphincters become depressed, and the animal may micturate involuntarily. Dogs may micturate at the commencement, from excitement, but this is not likely to be taken as a sign of danger. All the muscles relax, the pupil dilates widely, due in this case to paralysis of the third nerve. As before stated, however, the phenomena of the pupil are not constant.

Death may occur through the heart, respiration or both. The heart ceases in diastole from central or nervo-muscular depression.

Doses depend very much on the mode of administration. Horses and cattle usually take 2 ozs. to 6 ozs., dogs ½ oz. to 1 oz.

Modes of death.—Sudden death at the beginning of administration is supposed by Bartholow to be due to paralysis of the cardiac ganglia by the first vapour, or it may be due to shock or over stimulation of the inhibitory nerve. Death may also occur from cardiac paralysis during the stage of insensibility. This is said to be due to the loss of control over the lower centres by the cerebrum. The heart in this case ceases before respiration. This rarely occurs in the lower animals.

Secondly, death from tetanic spasm of the respiratory muscles occurs when the muscles become rigid. It causes accumulation of venous blood in the right side of the heart, and thus arrests its action. In this case the heart continues to beat after respiration has ceased.

Thirdly, death by paralysis of the respiratory muscles may occur in the stage of complete muscular relaxation, but it will be obvious that anæsthesia should not be carried so far.

Restoratory Measures.—Restoratives should be always kept at hand in case of need. If the mucous membrane becomes pale, and the pulse very weak, cardiac failure may be feared.

The administration must be at once discontinued and amyl nitrite applied to the nostrils. Injections of ether are also of great value in threatened cardiac failure.

If respiration becomes shallow and weak, and the mucous membrane purple, cold water should be dashed over the body and ammonia applied to the nostrils; all impediments to respiration removed, the tongue drawn forward in animals that can breathe through the mouth. Fresh air is of course the most valuable. Artificial respiration should be resorted to if practicable. Animals have been resuscitated by keeping the lungs inflated by means of a pair of bellows until the vapour was excreted.

I may mention here that when the operation is finished the patient, if down, should be made to lie until the effects have in some measure passed off. Cold water may be dashed over the head and body to expedite recovery. The animal should be assisted to rise, and supported for some little time when up. Knee-caps should be always put on before the animal attempts to rise.

Post-Mortem.—There are no constant *post-mortem* appearances in cases of death from chloroform. There may be signs of asphyxia or congestion of the lungs, but even these may be absent. If the vapour cannot be detected by the sense of smell, analysis of the tissues may be attempted in the following manner:—The tissues supposed to contain chloroform are put into a flask and distilled at a temperature of 160°F. and the vapour passed through a tube heated to redness. If chloroform be present, it will be split up into chlorine and hydrochloric acid. The acid reddens blue litmus and the chlorine can be detected by its setting iodine free from iodide of potassium, the iodide being detected by its action on starch solution.

(*To be continued.*)

FURTHER OBSERVATIONS ON ANTIVENENE, AND ON THE PRODUCTION OF IMMUNITY AGAINST SERPENTS' VENOM; WITH AN ACCOUNT OF THE ANTIDOTAL PROPERTIES OF THE BLOOD SERUM OF VENOMOUS SERPENTS.*

BY PROFESSOR FRASER, M.D., F.R.S.

(*Continued from page* 99.)

Influence of Diet in modifying the Minimum-Lethal Dose.—I have already drawn attention to the remarkable difference in the minimum-lethal dose of venom for herbivorous as contrasted with carnivorous animals. If this difference be

due, in any important degree, to the effects, transmitted and individual, of the special diet of each of these two groups of animals, it seemed probable that the minimum-lethal dose might be modified by changing the diet of any animal in whom this could be done without much deterioration of health; for example, by restricting the diet of a herbivorous animal to animal food.

A number of young white rats, accordingly, were put on an animal dietary as soon as they had been weaned; and, with the slight addition of a little vegetable food once or twice a week, found necessary to maintain them in fairly good health, this dietary was continued for seven weeks. To one of the rats, a dose of cobra venom, one-and-a-half times greater than the minimum-lethal, was then administered by subcutaneous injection, and, although marked symptoms of poisoning were produced, the rat recovered. Two weeks subsequently, the animal dietary having been continued, another of these white rats received twice the minimum-lethal dose, and it also recovered after a temporary illness. The experiments could not be carried further, as the other members of this family had fallen into bad health, and one after the other had died before this time.

In animals, whose progenitors had subsisted mainly upon a vegetable diet, the conversion of the diet into that of carnivorous animals is, therefore, alone sufficient to reduce the vulnerability to venom, and to cause, in this respect, an approximation to the resistance of a carnivorous animal.

This fact appears to indicate that the toxic effects of serpent's venom are due, to a large extent, upon an influence on the blood, an influence as yet only partially and imperfectly recognised.

Protection produced by Stomach Administration.—In the experiments which I have hitherto described, and, indeed, apparently in all others made in this new subject of Serum Therapeutics, protection has been produced by the subcutaneous or, less frequently, the intra-venous injection of the venom or other toxic substance.

These methods of administration are attended with inconveniences, which, it seemed possible, might be avoided were the toxic substance introduced into the stomach or other part of the alimentary canal. No doubt, the probability of thus producing protection is opposed by the fact, recognised even at the time of Celsus, and corroborated by such modern observers as Lacerda, Weir Mitchell, Fayrer and Brunton, and Calmette, that serpent's venom is either altogether inert,

or nearly so, when it is introduced into the stomach or any other part of the alimentary canal.

Even assuming that venom so introduced is inert, or nearly so, as a poison, it does not necessarily follow that it is incapable of producing protection; for this protection is, in part at least, dependent on the presence in the blood of a substance or substances which possess no distinct toxic action, and which may therefore be present in the blood as a result of the administration of venom, even although the venom did not produce any evident poisonous symptoms.

In order to obtain some evidence on this subject, the process for producing protection already described was applied to a cat, with the modification that the doses of venom were introduced into the stomach instead of being injected under the skin.

Taking as a basis the minimum-lethal dose by the latter method of administration, the cat received at intervals of from two to five days, one-fifth of the minimum-lethal dose on eight occasions, then one-fourth, and one-third; and at longer intervals, the minimum-lethal, twice, four times, six times, eight times, ten times, and so on, until, on the 116th day, a dose eighty times larger than the minimum-lethal was introduced into the stomach.

No observable disturbance was produced by any of these doses.

As in further administrations, doses of upwards of a gramme of dry venom would have been required, the experiment was not continued beyond this point, for such large quantities would have soon exhausted the rapidly-diminishing supply of venom.

Eight days after the animal had received by the stomach a dose of venom representing eighty times the minimum-lethal if given subcutaneously, a dose of venom corresponding to one and a half times the minimum-lethal was injected under the skin. No obvious general symptoms followed the administration of this dose, but some local œdema and skin necrosis were produced, and the animal has remained in good health until the present time.

During this experiment, an opportunity occurred for obtaining other facts of some interest. It happened that when the administrations of venom were commenced, the animal was already pregnant, and on the 54th day of the experiment two healthy kittens were born. These kittens were fed exclusively on the mother's milk, the mother continuing to receive gradually increasing doses of venom

One of the kittens, when fifty-seven days old, and when the mother had last received a dose equivalent to thirty times the minimum-lethal if given subcutaneously, received, by subcutaneous injection, twice the minimum-lethal dose of cobra-venom ; amd only slight symptoms, consisting chiefly of drowsiness and loss of appetite, were produced, from which the kitten completely recovered in a few hours.

The second kitten, when sixty-nine days old, received, also by subcutaneous injection, thrice the minimum-lethal dose; but the protection produced through the mother's milk was insufficient to antagonise this large dose of venom, and death followed the administration.

Evidence in favour of the production of protection by stomach administration, as well as of the toxic feebleness of venom when given by this channel, has been obtained with white rats also. Single doses, corresponding to 10, 20, 40, 200, 300, 600, and 1,000 times the minimum-lethal if given subcutaneously, were given by stomach administration to each of seven different white rats. Sleepiness and loss of appetite, lasting for a day or two, were the only effects produced even by the larger of these enormous quantities, and all the animals entirely recovered.

A further experiment was made on the white rat which had received 1000 times the minimum-lethal dose. Seven days after this dose had been administered, and when the animal was apparently in good health, twice the minimum-lethal dose was injected under the skin. Distinct though not serious toxic symptoms were produced, consisting of sleepiness anorexia, and increase of salivary and bronchial secretion; but in less than twenty-four hours these symptoms had disappeared, and the animal was soon afterwards in a perfectly normal state.

It would, therefore, appear that although serpents' venom, even in enormous quantities, fails to produce any toxic effects when introduced into the stomach, it still confers upon the animal a certain and not inconsiderable degree of resistance against the toxic effects of subsequent lethal doses of venom. That it does so by causing an antidotal substance to be present in the blood is also manifest from the result of the experiment on the kitten, which had been fed with milk derived from a parent receiving venom by the stomach.

In circumstances which are no doubt exceptional, some of these results would admit of useful practical application.

They probably also offered an explanation of the protection apparently enjoyed by certain snake-charmers, as well as by

individuals who claim to be protected, whether members of special sects or not; for subcutaneous injection is not likely to be the method, and it certainly was not the method several hundreds of years ago, employed for the introduction of the protection-producing venom into their bodies.

Antidotal Properties of the Blood-Serum of Venomous Serpents.—The results of these experiments may explain also the clearly-established protection possessed by venomous serpents themselves.

They, as well as all other circumstances, render it important to determine whether the blood of venomous serpents contains, as does that of artificially-protected animals, an actual substance possessing antidotal qualities.

In order to arrive at some definite conclusion on this subject, I have made endeavours to obtain living venomous serpents, and also the serum separated from their blood.

Last year, an arrangement was concluded with one of the best known of the importers of wild animals to supply me with living cobras. He, however, has not succeeded in doing so, because of some exceptional difficulties; but, as an alternative, he has recently sent me several living specimens of the Hamadryas (*Ophiophagus elaps*), a serpent of greater size and more aggressive disposition than the cobra, and reputed to be at least as deadly as it.

A few days after their arrival, it was observed that moulting was about to commence; and as the condition of health is deteriorated during this process, blood has not yet been taken from any living Hamadryas. One of them, however, became sickly and died. A short time after its death the neck blood-vessels were opened, and, as coagulation fortunately had not occurred, a small quantity of blood was collected, from which a little blood-serum afterwards separated. As no liquid venom could be obtained from this Hamadryas, this serum has been tested against cobra venom. Two experiments were made, in which it was mixed with slightly more than the minimum-lethal dose of cobra venom, and the mixture then injected under the skin of rabbits. When the quantity of Hamadryas serum was ·15 c.c. per kilogramme of animal, death was not prevented: but as the animal did not die until more than seven hours, an antidotal effect had apparently been produced by this quantity of serum. In the second experiment, a larger quantity of serum was used—namely, ·25 c.c. per kilogramme, and the result was entirely successful, for not only did the animal survive, but no decided symptoms of poisoning were manifested during the six hours in which

the animal remained under nearly continuous observation. Two experiments were also made in which this antivenene wss administered thirty minutes after rather more than the minimum-lethal dose of cobra venom. In the first, the dose of antivenene was ·3 c.c. per kilogramme; but this dose was found to be an insufficient one, for the animal died in four hours. In the second experiment, ·5 c.c. per kilogramme of antivenene was administered, in the same conditions as in the former experiment, and it proved to be a sufficient quantity, for the animal recovered, after manifesting only slight toxic symptoms.

I hope by-and-by to extend these observations with blood-serum and venom, taken in more favourable circumstances, from the other and larger Hamadryas, which are now apparently in a state of excellent health.

It has, however, already been possible to confirm these results with the blood-serum and venom of another species of serpent. Dr. Thomas Bancroft, of Brisbane, Australia, has recently sent me the dried blood-serum of three black snakes (*Pseudechis porphyriacus*) of that country, and also some dried venom removed from the poison-glands of the same three serpents.

The venom, as it has reached me, is not a very active one, the minimum-lethal dose for rabbits being between ·003 and ·0035 gramme for each kilogramme of animal. At the same time, although this serpent is a member of the Colubrine family, the irritative effects at the position of injection, and even more so on the kidneys following its absorption, are intense. In all the experiments made with the venom alone, the urine voided within a few hours was of a dark red, almost black colour, and was found to contain a large quantity of hæmoglobin, but no blood-cells.

Although the quantity of dry serum was small, there was sufficient to allow three experiments to be made, for the purpose of determining if it can prevent death from being produced by a lethal dose of venom, when the two are mixed together before administration. In one of these experiments, the dose of serum was 1 c.c., and that of venom 0035 gramme per kilogramme of animal; in the second, the dose of serum was ·5 c.c., and the dose of venom the same as in the first experiment; and in the third experiment, the dose of serum was 1 c.c., and that of venom ·004 gramme per kilogramme of animal. In each case, the gratifying result was obtained that the animal survived the administration of these lethal doses of venom.

It has thus been shown that venomous serpents themselves possess a definite substance in the blood-serum, which possesses antidotal properties against their own venom and the venom of other species of serpents.

It is probable that the substance is produced from venom shed upon the mouth-surface, and absorbed into the blood from this surface or elsewhere in the alimentary canal, and also from venom absorbed directly into the lymphatics and blood-vessels of the poison-glands. At the same time, the protection which is enjoyed by several species of serpents may also be produced by venom introduced into the body with the venomous snakes on which some of them, and especially the Hamadryas, largely subsist.

The blood-serums of the two species of venomous serpents that have been examined are certainly not so powerfully antivenene as the serum which can be obtained from artificially protected animals. They have, however, been obtained in conditions which are not the most favourable for determining the true value of the blood-serum of serpents. This can probably only be done in the countries in which the serpents are found.

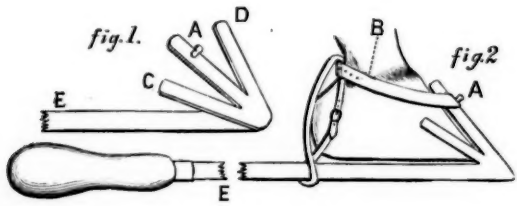
If this natural antivenene be found to be powerful, then a new, and in some respects convenient, source for antivenene will become available; but even if the antidotal power be not so great as that of the serum of artificially protected animals, it is possible that its value may be increased, and a sufficiently powerful antidote obtained, more rapidly than with entirely unprotected animals, by injecting several successive doses of venom into the serpents themselves.

FIBROUS ANCHYLOSIS OF THE FETLOCK JOINT.

BY JOSHUA A. NUNN, F.R.C.V.S., D.S.O., C.I.E., VETERINARY-CAPTAIN, A.V.D., PRINCIPAL LAHORE VETERINARY COLLEGE.

IN the VETERINARY JOURNAL for July, 1892, an article was published by Veterinary-Captain L. J. Blenkensop, A.V.D., and myself, on Fibrous Anchylosis of certain joints in the horse, and a method of treatment by forcibly breaking down the adhesions under chloroform and restoring to the joint its normal degree of the power of flexion was described. Details were given of the operation and how to obtain purchase and traction on the toe of the foot where adhesions were to be broken down in the fetlock. This was done by a piece of flat webbing adjusted round the foot in a particular manner, so that the whole force could be applied to the toe. There is a

certain amount of knack required in adjusting the webbing to prevent its slipping, which it is liable to do even with the greatest care; and as two or three men are required to pull on it the steady, even traction that is so necessary in breaking down old adhesions is almost impossible to get, as no matter how carefully instructed, it is very hard to get the men to pull together without any jerking. To obviate this I have had the apparatus shown in the sketch made. It consists of three claws to grasp the toe of the foot, one in the centre and one at each side, spread out above but joined together below. The centre one is the longest—about $3\frac{1}{2}$ or 4 inches—and is furnished with a stud A., Figs. I. and II., to which the strap B., Fig. II. is fastened. The side claws are about 3 inches long, the distance across the top between C and D, Fig. I., is three inches over all. The shaft E, Figs. I. and II. is about a foot long and terminates with a wooden handle like an ordinary



firing-iron. The apparatus is applied to the foot after the horse is thrown and is under chloroform, the strap B being buckled round the pastern, and the small strap F round it and the handle E. The straps are merely to prevent the apparatus from shifting. It will readily be seen that enormous leverage can be obtained on the toe, and that one person is quite able to exercise force enough to break down any adhesion no matter how firm; in fact, in ordinary cases I find that this can be done with one hand. The advantage of the operator having the whole force required under his own control instead of two or three men pulling and jerking at the webbing, is so obvious as hardly to require mention, and the amount of force exerted and degree of flexion given can be regulated with the greatest nicety.

The instrument of which the drawing is given was made by a native blacksmith, and although clumsy, answers its purpose, but no doubt an English workman could turn out a much lighter and superior article.

IMPERFORATE ANUS WITH FALSE OPENING—ANUS VULVALIS.

BY J. T. DUNCAN, M.D., V.S., PROFESSOR OF ANATOMY ONTARIO VETERINARY COLLEGE.

IN the July number of the VETERINARY JOURNAL, two cases of this peculiarity are recorded. The abnormality is an exceedingly rare one in the full-grown animal; not, however, so uncommon in the young. Some of these cases in the young come under the notice of the practitioner; others are allowed to live or die without professional assistance.

Fleming's "Obstetrics"* (under the heading of "Imperforation of the Anus") thus speaks of the condition:—"In young female animals, in which the rectum is absent, it often happens that the intestine opens into the vagina (vulva), and the fæces are expelled by that passage" (p. 760). Again, Rainard's directions for operation are quoted. Evidently a number of cases in the different species have been operated on successfully.

The same work quotes a case of operation by Leibenrogg upon a sow.

The subject was a nine-months one. So long as the animal was young and the fæces soft, no difficulty was experienced; but when the animal had to be fattened with bulky food, the vulval opening was not sufficient to serve Nature's purposes. The operation of opening into the rectum through the anus proper was successful, the fæces passed by the natural route; but when the animal was killed, six months after operation, the opening into the vulva had not entirely closed.

In discussing or reporting cases of this peculiarity, it will be well to come to some agreement as to terms, there being a good deal of looseness at present in this matter.

First, in reference to the name to be adopted. It should combine explicitness and brevity to as great a degree as possible. Without taking time to discuss the various names in use, it would seem to be desirable that we adopt one of those at the head of this article, viz., anus vulvalis. Not only does this indicate the position of the opening, not only is it short, but it is a term considerably used to express this condition in the human species.

What do we, as veterinarians, understand by the term vulva? Here, again, there is some confusion, for while some consider the whole passage from the os uteri to the labium to be the vagina, others hold that the posterior five inches of

* "Veterinary Obstetrics," by Dr. G. Fleming. Am. Ed., 1881.

that passage is the vulva. The latter contention is undoubtedly the correct one. Therefore, we speak of the vulva as extending from the labia to the hymen, being a passage (in the mare) of about the depth stated above.

We speak then of anus vulvalis, because the intestine opens into the vulva. If the opening were more than five inches in advance of the labial commissure, the fæcal discharge would be into the vagina proper. Then we should use the term anus vaginalis,* but this condition has not, I believe, ever been recorded as occurring in the lower animals. As has been already remarked, anus vulvalis is seen in a number of young animals. But it is extremely rare in the full grown. Two reasons exist for this. First, a number of those cases are successfully operated on when young, and second, many of the cases are allowed to die, not being considered worth the cost of an operation. And in some cases, where the anus is apparently well formed (although actually impervious) the animal may grow well to maturity before the condition is observed or understood. If the vulval opening is sufficiently large to allow the fæces to pass freely, and if there be no incontinence of fæces, it might be indeed many months before a professional man would be called to explain this condition.

While not of the same importance in the lower animals as in the human species, this abnormality claims from us, as veterinarians, some attention. And now that attention has been drawn to it by the interesting case published last month, it is to be hoped that systematic records of all cases, whether in the young or old, may be published in the veterinary journals. If the cases coming under the notice of practitioners, with a statement of the operations performed. and the results of such operations, were thus given to the profession, very valuable data would be accumulated.

It may be of interest to glance, for a moment, at the subject in connection with the human species. Many cases are on record—the vast majority, however, being in infants.

The opening into the vulva, in some of these cases, was a mere pinhole, in others it was double, and in still others, both a normal anus and an opening into the vulva were found. In these latter cases, fæces escaped in both directions. In some, no sphinctor could be discovered. In such cases, the patient is unable to control the lower bowel, in other words, there is incontinence of fæces.

* In the human being, when the anus opens into the vagina proper, that passage is found to be double.

In the human adult, as in the lower animals, cases of anus vulvalis are very rare, the chief reason for this being the successful operations performed upon infants.

The manner in which this interesting abnormality is produced is essentially the same in the human being as in the lower animals. It may be understood by a brief reference to the development of the intestine. Speaking now of the lower animals, the intestine in early fætal life is but a tube, closed at both extremities. There is at first no appearance of a mouth, nor yet of an anus. But a depression soon appears in the situation of the mouth, and this is lined by common integument. A similar depression, or pouch, also lined by integument, appears in the region of the anus and vulva, gradually growing more deeply into the embryo, to meet the intestine, and to receive the opening of the generative and urinary passages. This cavity being a common one, may be spoken of as a cloaca.

Ultimately, by the development of the intestine, and the deepening of the mouth, the septum shutting it off from the intestine is absorbed, and a similar process destroys the septum dividing the cloaca from the intestine posteriorly. The septa being gone, there is now an open tube through the length of the embryo.

But we have stated the cloaca to be a common cavity, the intestine entering it above the generative and urinary passages anteriorly and below. Nature now proceeds to divide off the intestine from the other openings. A thin, integumental band of tissue stretches transversely across the cloaca, and gradually growing, completely shuts off the upper part of this cavity from the lower. We thus have the anus divided off from the vulva. The anus is the posterior opening of the intestine, while the valva has opening into it the vagina and urethra. Now if, from any cause, the development of this transversed plate were arrested, it would not entirely divide the intestine from the vulva. The intestine then would open in two directions, viz., through the normal anus and into the cavity of the vulva.

Again, invagination of the cloaca is sometimes not complete. Sometimes there is no depression whatever above the transverse plate or band, then we have no visible anus; or the depression may be very slight. In either case the intestine is not likely to develop posteriorly sufficiently to pierce this thick septum. The transverse band being incomplete, the intestine opens into the valva, and we have the condition under consideration, viz., anus vulvalis. In the

last place, we may have normal invagination of all parts of the cloaca, we may have a complete transverse septum subdividing the cloaca into anus and valva, yet there may be an arrest of the development of the intestine backwards; so that the gut does not nearly touch the cloaca. Then we have a true case of imperforate anus.

A COMPLICATED CASE IN A MARE—RECOVERY.

BY JOSEPH N. CARTER, F.R.C.V.S., BURNLEY.

THE subject of my communication was that of a well-bred mare, aged about 17 years, the property of Messrs. John Taylor & Co., wine and spirit merchants, Burnley, the history of which cannot, I think, but prove interesting to the veterinarian on account of the rapid succession of changes of a grave nature that ensued during treatment, which I must confess, were somewhat perplexing to account for, and I must leave it for some of my more enlightened brother practitioners to unravel the mystery attached thereto.

July 4th, 7.45 p.m., received a message to visit the mare in question. Being out at the time, my assistant, who received the message, went at once, and upon his arrival examined the animal, and after careful enquiry, was informed that the mare had done a good day's work, and returned to the stable about 7 p.m., and then, to all appearances was quite cheerful, and nothing was noticed amiss until about 7.20 p.m., when it was found she had not eaten up her feed. She would take a mouthful, look back, and occasionally scrape with her fore feet. Pulse and temperature normal, no perceptible injection of visible mucous membranes. Came to the conclusion that it was simply a case of spasmodic colic, and at once administered a colic draught and hypodermic injection of morphia. In a short time patient seemed much better, and remained quite easy for some three hours, when the attendants were about to lock up the stable and leave for the night, when she again shewed signs of uneasiness. We were again sent for, and being at home myself when the second message arrived, I at once set out, and arrived about 11.30 p.m. Found mare very uneasy, standing over repeatedly from side to side of stall; body dry but deathly cold; would persist in nibbling away at some clean bedding, scraping occasionally. Mucous membrane injected. Pulse 60; temperature 101, with repeated eructations after swallowing, and peculiar muscular twitchings of the body. My greatest fear was rupture of the stomach, and I, under the circumstances, abstained from giving

medicine per oram, and contented myself with hypodermic injection of morphia m. xl., and left her for an hour, and returned about 1 a.m. Found mare easier; remained a short time, when she again commenced being uneasy, showing abdominal pains; at once gave instructions for the application of woollen rugs wrung out of boiling water. My orders were carried out in a most praiseworthy manner, there being about half-a-dozen men in attendance. These hot rugs were applied and re-applied every few minutes for two hours without intermission. She was then wisped down from head to foot, applied a little ammonia liniment to abdomen, and well rugged up. She still continued to show slight uneasiness. I remained in attendance until 4 a.m., when I retired to my bed until 8 a.m.

July 5th.—Found mare very restless, boring head into corner of stall against rack. Upon examination, found the head badly bruised and bleeding; pulse slow and wiry; temperature 101⅕; pupil of eye dilated; stertorous breathing. All eructations and muscular twitchings of body subsided. I continued to watch my patient's behaviour for a little time, and came to the conclusion I had cerebral mischief now to contend with. I had some sacks well stuffed with straw, and placed in such a position as to prevent further injury to the head; had a vinegar cloth applied to the poll, and administered cathartic ball. Called again 12 a.m.; found mare standing, propped with outstretched legs, quite blind, in fact in a complete state of coma. Pulse very slow and weak; temperature 103; head bored into corner; paddling about; extremely weak on her legs; expecting her falling over and expiring any minute.

3 p.m.—To my astonishment, found mare alive. Not quite so restless; paroxysms not so frequent and of less intensity; pulse 72, temperature 102. Had no movement of bowels since commencement of disease. Gave enema of soap and water and ol. lini one pint.

5 p.m.—Improvement maintained, though at times a little uneasy; stronger on legs. Administered ball containing belladonna and pot. brom. Pulse and temperature about same.

8 p.m.—Mare in semi-conscious state; taken a little sloppy mash of bran and linseed, and about a quart of luke-warm water; bowels still confined. Administered ball as before. Had the partition taken down and made a roomy loose box, and plenty of good dry bedding put down to encourage mare to lie down.

10 p.m.—Walking about; consciousness quite restored. Pulse 72, temperature 102. No response to physic and enema, but had micturated four times since last visit (two hours before). Remained with my patient until 1 a.m.; before leaving administered ball containing belladonna, ammon. carb., and nux vomica, and left one to be given about 6 a.m.

July 6th, 9 a.m.—Still improving; eaten a little mash and passed a little dung.

1 p.m.—About same. Pulse 64, temperature 102. Had her walked out a few minutes in the street. Administered ball as before.

7 p.m.—Mare very dull. Pulse 72, temperature 101⅜.

11.30 p.m.—About same; very dull and listless. Pulse 64, temperature 102. Administered a stimulant and left her, only to be knocked out of bed at 2.30 a.m. Mare been down for the first time since she started, and rolling as if in great pain. Pulse and temperature about same as last visit. Shows signs of distress. No further movement of bowels. Gave hypodermic injection—morphia m. xl., and 1 gr. sulph. eserine, and enema of glycerine 8 oz; in a short time get relief.

July 7th, 10.30 a.m.—Mare easy; takes a little grass out of hand greedily; bowels still confined. Raked her and removed a small quantity of very dry fæces slightly stained with blood. Administered alt. ball and enema of ol. lini one pint.

12.45 noon.—Mare dull. Pulse 84, temperature 102. Mucous membranes very injected; still no movement of bowels.

1.30 p.m.—Mare down and rolled as if in pain. I was again summoned. Pulse 80, temperature 102⅕; fœtid breath from left nostril; breathing slightly accelerated. Gave hypo-sulphite of soda in drinking water.

5.30 p.m.—Mare lying down and appears quite easy; pulse 80, but weaker; temperature 102½. Raked and removed very hard dry fæces. Could feel distinct ulceration of the mucous membrane lining the bowel at seat where I had broken down concretions. Enema of ol. lini and soapsuds and glyc. bellad., with hose pipe about six feet long attached to pump, taking the free end of pipe in as far as my arm would permit before injecting fluid.

9.30 p.m.—Mare improving. I am informed she had a fairly good motion about six o'clock. Breathing normal. I administer ball containing ammon. carb. and nux vomica, and enema as before. Breath sweet.

11 p.m.—Mare had three natural motions of pultaceous fæces.

July 8th, 4 a.m.—Called out of bed, mare very uneasy, wanting to lie down and in endeavouring to do so, instantly jumps up before really reaching the ground as if in the greatest pain, scraping with feet. Pulse 80, temperature 102⅜. No further motion since last visit. Enema as before with long pipe. Hypodermic injection morphia m. l. and ball containing bellado. chlor. hyd.

10.30 a.m.—Mare easy, raked her, and removed small quantity of soft dung. Pulse 84, temperature 101. Apoplectic condition of bowel and had to conduct enema pipe with great care and injected ol. lini one pint, and glyc. bellad. 2 ozs.

5.30 p.m.—Mare visibly growing weaker, refuses all food. Pulse 92, temperature 102½.

11.30 p.m.—Mare somewhat brighter, no further motion of bowels. Pulse and temperature about same, shows signs of uneasiness occasionally, so again had the hot blankets applied for three hours without intermission. Administered ball as before. Enema with long pipe and hypodermic injection of morphia m. l. at 2 a.m., and left her easier at 2.35 a.m.

July 9th, 10 a.m.—Mare had a fairly good night. Pulse 72, temperature 100⅘, no movement of bowels, ball as before, and enema this time with ol. terebinth 1 oz. added.

2.30 p.m.—Mare about same, takes a little gruel, and also nibbles at grass.

9.30 p.m.—Mare much as before but had a good motion about five o'clock, inserted hand in rectum and found it much dilated and full of watery fæces.

July 10th, 10 a.m.—Mare much improved, had two motions during the night. Pulse 60, temperature 100. Administered nerve tonic ball.

10 p.m.—Improvement maintained. Pulse and temperature same, does a lot of grinding of teeth, from what cause I cannot say.

July 11th, 9 a.m.—Mare still improving. Pulse 52, temperature 100, eating better, taken some hay tea greedily, administered tonic ball.

10 p.m.—Much about same in every way, grinds teeth less frequently, ball as before, had several motions.

July 12th, 9.30 a.m.—Mare not so bright. Pulse 60, temperature 100⅗. Administered nerve tonic ball.

8.30 p.m.—Appears more cheerful, dung assuming more natural consistency. Pulse 56, temperature 100⅕. Adminis-

tered ball containing ammon. carb. and nux vomica and gentian, ceased grinding of teeth, eating well. I attended my patient until July 17th, when she was discharged cured, and is now working every day, and appears none the worse for her illness. Was it a case of acute indigestion, followed by coma and stoppage ?

ENTERITIS IN A DOG, ACCOMPANIED BY RABIFORM SYMPTOMS.

BY F. J. WILSON, ESQ., M.R.C.V.S., HUDDERSFIELD.

On August 6th I was called to see an Airedale terrier that was suspected of being rabid. For a day or two the dog was noticed to be a little strange in its behaviour, running about, snapping at things, and hiding under chairs and tables. Having got out, it ran into a wash-house, where it was locked up. Here it was observed to behave in the same manner, snapping aimlessly at imaginary objects, but not howling or showing other symptoms of pain. The owner thought that it was a little lame. It refused all food. It died three days after being shut up, without developing any further symptoms. On *post mortem*, all the organs were found to be healthy except the intestines. There was a complete absence of food in the stomach and bowels.

On examining the brain, the ventricles were filled with fluid, the membranes being slightly congested.

The condition of the intestines was remarkable. The mucous membrane was red in colour, thickened, and studded all over with little eminences.

They could be distinctly felt under the finger, and appeared to be confined to the mucous coat. They were about the size of No. 1 shot. They were most numerous in the colon, and were found in decreasing numbers almost as far as the anus.

On examination of these raised places each was found to have a depression or crack in the top, looking like an erosion of the epithelium.

I have had a few such cases before, but have never seen any showing such pronounced symptoms as this one. My impression (which has been confirmed by Principal Williams), was that the disease was of an infectious nature, and that it belonged to one of the many ill-understood forms of intestinal mycosis.

LYMPHADENOMA OF THE LIVER IN THE DOG.

BY F. J. WILSON, ESQ., M.R.C.V.S., HUDDERSFIELD.

On making a *post-mortem* examination of an old retriever that had died after a week's illness during which there were symptoms of gastritis and intestinal trouble, a remarkable condition of the liver was revealed. The whole organ, which was puckered and distorted out of all semblance to a normal liver, looking indeed more like a bunch of grapes, had on its surface and through its substance whitish suety-looking masses, so numerous were they that almost all trace of liver substance had disappeared, making one wonder how its functions could possibly be carried on by such an altered organ. On cutting into these masses they were found to be hard and dry, contained no trace of pus, indeed they were cartilaginous looking. Principal Williams, to whom the liver was submitted, states that it was a case of lymphadenoma. He states that the only other disease with which it could be confounded is, perhaps, tuberculosis, but as there was no tubercular condition of other organs and as there was an absence of tubercle bacilli in the liver, there can be no doubt but that this was an advanced case of lymphadenoma of the liver.

MONSTROSITY.—DELAYED PARTURITION.

BY CHARLES DRABBLE, ESQ., M.R.C.V.S., BRADFORD.

On August 8th I was sent for to calve a heifer. I saw her about 3 p m., and on making enquiries, found that she had made all preparations for calving in February last, shewing labour pains all one day. The "water bag" was stated to have shewn itself, but this gradually disappeared. The ligaments again assumed their normal condition, and the animal continued to thrive and do well until the 7th of August, when she again prepared for calving. The throes were violent, the water bag burst immediately on presenting itself, and a large portion of the bowels and the liver of the fœtus were expelled.

Finding that the heifer was in a dying condition on my arrival, I advised that she should be slaughtered, and this was done, and the fœtus, which appeared to be a remarkable monstrosity, I have forwarded to you.

(The specimen, which was much decomposed, turned out to be a Celosomian Monstrosity. While the thorax was properly formed, the ribs articulating with the sternum, and closed posteriorly by the diaphragm, the abdominal walls were absent, and the viscera floated about unconfined.)

SEPTIC PERITONITIS FOLLOWING CASTRATION

BY JOHN CAMERON, ESQ, BERWICK-ON-TWEED.

Two yearling colts castrated by me in the usual manner and with the usual precautions as to cleanliness, etc., both died. They were operated on by the actual cautery.

The bowels, on *post-mortem* examination, were seen to have a reddened appearance on the peritoneal coat, a blush merely, no intense hæmorrhagic congestion, the mucous coat being in most parts of the bowel normal. In the cæcum, however, there was much thickening of the mucous membrane. Here and there on the peritoneal surface of the bowel, and confined to the peritoneum and sub-peritoneal tissue, were lozenge-shaped raised patches, reminding one somewhat of the ulcer of the bowel in swine plague. In the small intestines, where they were most numerous, they appeared to be related to Peyer's patches.

It was altogether a peculiar condition of the bowel, and a portion was sent to Principal Williams for examination.

(The patches, as stated, were limited to the sub-peritoneal tissue, and could be separated readily from the sub-jacent muscular coat of the bowel. The mucous coat was intact, and appeared to be almost normal.

After hardening in sublimate, and afterwards in spirit, sections cut through the patch and stained by Gram's method gave beautiful preparations of bacilli lying in depôts in the fibrin, of which the patch was made up. They were in the spore filament stage, and showed long chains intricately coiled.)

THE UNIFICATION OF ANATOMICAL NOMENCLATURE.

BY PROFESSOR O. CHARNOCK BRADLEY, NEW VETERINARY COLLEGE.

Such is to be one of the subjects of debate, in the Anatomical Section of the Sixth International Congress of Veterinary Medicine, to be held at Berne on the 16th to 21st of this month. We believe that this is the first time a special anatomical section has been formed in the International Congress, and a more fitting subject for discussion could not possibly have been found for its inauguration.

The present confused state of the nomenclature used in veterinary anatomy, is little short of a disgrace to this important branch of biology.

To take the instance of the names given to bones:—a most unsatisfactory state of affairs exists; some authors adhere

almost entirely to the name employed by human anatomists, without apparently considering for a moment, if these names are at all applicable to similar parts in the lower animals. For example, the name *pisiform* has been used to designate a bone, the shape of which could scarcely be less like that of a pea; and this has been done solely because a corresponding bone in man receives and merits this name.

If we examine the names employed in osteology generally, we must be struck by the remarkable lack of method; the shape of one bone, or part of a bone, the position of another, and the supposed resemblance of a third to some familiar or unfamiliar object, &c., have all been made use of in compiling the existing erratic nomenclature.

In naming the muscles there is an even greater confusion; names have been borrowed from human anatomy, or new ones coined just as a particular author has thought best. The number of synonyms is consequently appalling. Take for instance the *great anterior straight muscle of the head;* it has received from different authorities the following names: — Long flexor of the head, trachelo-suboccipitalis, rectus capitis anticis major, and trachelo-occipitalis.

It is useless to go on multiplying examples, but in all the divisions of anatomy the same condition will be found to exist.

The present system is unsatisfactory to student, teacher, practitioner, and biologist alike. The student has to cumber his brain with a number of perfectly useless terms. The teacher must be continually making use of two, three, or even more names where one should be sufficient. The practitioner, when he reads an article in which anatomical terms are employed, has probably to make repeated references. And the biologist, unless he is quite familiar with the standard works on veterinary anatomy, finds himself in an even worse position.

What is there to prevent us having an universal nomenclature? The formation of such a nomenclature will have to be delegated to a special commission composed of all the leading veterinary anatomists. The resultant advantages will be numerous and great, the most important of which will be greater facility for exchange of ideas, and less labour in teaching.

A PECULIAR CASE.

BY A. MACGREGOR, ESQ., M.R.C.V.S., CRIEFF.

SENT for at 11 a.m. to see brown carriage gelding, the property of William Forbes, Esq., stated to be very much

swollen about the lips and mouth, with continual dropping of saliva; appears hungry and thirsty but is unable to swallow. Is very shaky on the legs. When I saw the animal he was standing in the stall, the fore-legs spread out in front and the hind ones well under the belly. Pulse and temperature were about normal; when pushed back he dragged the fore-feet instead of lifting them. When taken out he seemed very shaky and staggering in his gait; threatened to fall when turned round. I examined the mouth, but could detect nothing except that there was swelling of the lips and that the tongue was furred and almost black at the root. When the head was held up he was quite able to swallow, and seemed then to be greedy for food and drink, as if hungry and thirsty.

I gave him a purgative ball with great difficulty, and blistered the throat and œsophagus with mustard.

The shoes were removed and the feet poulticed.

The horse had always been a shiverer and a bad thriver.

Next day, as I was unable to visit him, I sent an assistant, who blistered the sides for congestion of the lungs, when the horse became so violent that he had to be shot.

Post-mortem.—All the organs, with the exception of the stomach, seemed to be healthy. The mucous membrane of the stomach was swollen and was very dark in colour; appeared greatly congested. The tongue also was tumefied and dark in colour.

The case was probably the result of long-continued indigestion, and would probably have recovered under stomachic treatment.

Editorial.

NOTIFICATION OF DISEASE.

A VERY serious question has been proposed by the Government for solution by the veterinary profession. The question, like so many others that have revolutionised the world of medicine, is apparently very simple and very innocent, and might tempt the inexperienced practitioner to an off-hand, careless answer; but I confess, for my own part, that the more I study it, the more does it seem surrounded with difficulties. In this article I do not presume to dictate a policy to my professional brethren; I cannot even say that I see my own way clearly through the maze. I merely wish to point out to the profession the arguments that may be used in favour of and against the Government proposal, and to urge upon my

fellow-practitioners the importance, indeed, the vital necessity of pondering the matter well, and discussing it frequently and carefully before the official answer is sent to the Board of Agriculture.

The first point to be noted is the fact that we have attained such a status as to command the confidence of the Government, and we must admit that this recognition, though tardy, means for us the attainment of a very desirable object. It has been a constant grievance with us that we have been slighted, and our claims put aside in favour of non-professional officials, whose interference in veterinary affairs has been an insult to us. If we can, by co-operating with the Board, get rid of this vexatious outside element, surely we shall have scored something in the game of life, surely it will be worth our while to submit to a little inevitable friction with the world and with our clients.

So far, our path is clear, but after this comes obscurity and difficulty. Suppose an Act of Parliament should be passed. Is it to apply to veterinary inspectors only or to the general practitioner as well? Is the law to be binding on the whole country, or is it to be left to the Local Authority to adopt the Act or not, as it chooses? This freedom of choice is the great blot and the essential weakness of the corresponding Medical Act. Is the notification of disease to be promptly followed by measures for its isolation and eradication? Is the veterinary surgeon to be invested with the powers of a coroner, and must all cases of death among animals, barring those from accident or natural decay, be reported to him for investigation? If inspectors alone are to be compelled to notify contagious diseases, these men may say good-bye to all chance of private practice, for they will be avoided like the plague; no one will employ them who can get any other practitioner to attend his horses or cattle; every effort will be made to outwit and deceive them, and they will come to be regarded with suspicion. Even if *all* veterinary surgeons should be compelled by Act of Parliament to notify, the same thing would take place, only the ill-will in that case would be extended to the whole profession, and to counteract such a misfortune and such a danger it would be necessary to invest the veterinary surgeon with power to investigate *all* deaths amongst animals, and make it penal on the part of the public to conceal the presence of disease.

The Act would likewise require to be made applicable to the whole of Great Britain and Ireland. If it is to be passed at all, no discretionary power must be left to municipal or

county authorities to adopt the Act or neglect it. Let us suppose that the city of Edinburgh adopts the Act and all veterinary surgeons within its bounds are compelled to notify ; let us suppose that the county of Midlothian does not adopt the Act, what is the result likely to be? All the unscrupulous, and all the timid, and, what is more, all the poor owners of animals will invite practitioners from the neighbouring towns and villages to prescribe for their animals and so the purpose of the Act will be frustrated. Suppose Newcastle adopts the Act, and Gateshead does not : at once all veterinary business goes south of the Tyne. It seems quite clear to me that the Act, if it should be passed, must be universal and inexorable, but our legislators will find when they come to consider the matter that although the principle is sound the details of working present tremendous difficulties.

The public also, and especially the horse-owning public, will insist on having a voice in the matter. They will ask if the business, say, of a great carting-contractor or brewer is to be paralysed because a veterinary surgeon has put his ban on their stable, suspecting the presence of glanders or influenza. They will talk about our theories as "mere fads" ; they will strenuously object to our inoculating their, apparently, healthy animals, and tell us that we are merely spreading disease and death ; they will say, "Take away to your hospital (if you have one !) an animal that is plainly diseased, and cure it if you can, but don't interfere with our working the other animals, and don't frighten our neighbours with your spectres of disease, and prevent them from helping us." This brings up the whole question of compensation, which will require the intervention of the Chancellor of the Exchequer and a special clause in next year's budget !

Proceedings of Veterinary Medical Societies, etc.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 122.)

Chloral Hydrate.

ALTHOUGH not an anodyne in the strict sense, is one of the most valuable agents that we can use to combat the pain exhibited in stomach and bowel affections. It does not act as a sedative to the periphery of sensory nerves, but in an indirect manner through nerve centres. Medicinal doses are anodyne, hypnotic, and anæsthetic in full doses (½ to 1 ounce). Its hypnotic effect is the most marked, and it is not followed by nausea. As compared with opium it acts more quickly, it does not interfere with peristaltic movement or intestinal secretions, and it frequently induces sleep, which is most

beneficial in protracted abdominal pain. In cases where there is much flatulence, I usually give it in combination with ammon. carb. in ball. The dose generally prescribed is from one to four drams, but I find the small doses of little or no use. I never give it in these cases in doses of less than half an ounce. Some writers deny its good effect unless it is combined with opium. I have found it, however, to be quite as efficacious without.

Cannabis Indica (*Indian Hemp*).

Although in comparison with the other anodynes, Indian hemp may be termed a modern drug, it has been in use on the continent and in this country sufficiently long to have established itself as one of the foremost in the list. It has several ingredients, the chief of which are cannabin and cannabinon. It is probably the first of these that is the most useful active principle. It is described as a deliriant, narcotic, anodyne, and antispasmodic by Finlay Dun; as an intoxicant, deliriant, and narcotic, by Dr. Mitchell Bruce and Sir Robert Chrisistan, writing upon its use, says for "energy, certainty, and convenience, Indian hemp is the next best anodyne to opium, and often equals it." It possesses advantages over opium and its preparations, inasmuch that it acts quicker, its effects are more lasting, and that it does not produce nausea, neither does it check intestinal secretions and peristaltic action. I believe that the various phenomena observed after its use depend entirely upon the dose given, and that if large doses be given none but hypnotic effects will be produced. The alcoholic extract in ball is the form in which it is generally used in veterinary practice, as being the most convenient, although a good solution can be made of the extract with gum tragacanth and glycerine, for giving in draught. The doses usually prescribed, 1 to 2 drams, are of no use whatever, and if those writers who have not been favourably impressed with its use have given it in this quantity I am not surprised at their conclusions. These doses will produce little delirious excitement, but desirable effects are only to be obtained by the administration of from half to one ounce. Within from ten to thirty minutes after receiving the full dose of the extract, the patient will be in most cases fully under its influence, and will be thoroughly quiet and free from pain. It is sometimes given in doses of one ounce or more, and a deep narcosis is induced which lasts for some time; I fail, however, to see the advisability of producing this extreme narcotic state, and then having to use stimulants to revive the patient. I have in a few instances, in large powerful dray horses, given these large doses; but, as a rule in my patients, which are horses of a medium build, and many of them pit horses, I find from 4 to 6 drams to be quite sufficient. When there is a recurrence of the pain after the effect of the first dose has passed off, I have upon several occasions repeated it, but I do not usually find it necessary, for if there is any chance of a favourable termination relief will follow the first dose. In those cases where a second or third dose has been given there has been a fatal termination, and *post-mortem* examination has disclosed either twist, hernia, or calculus. I do not think it is preferable to opium or morphia in every form of intestinal disease, but for combating the pain in gastric impaction, colic, and impaction of the large bowels, I believe that it has no equal. Its effects in enteritis and peritonitis are not so marked, neither is its use indicated here; opium or morphia are preferable, because they check peristaltic movement and allay irritation, which is most essential in an inflamed part. As cannabis indica given in ball takes some little time to dissolve in the stomach and exert its influence, I have given, if pain be very severe and animal very violent, 2 or 3 grains of morphia immediately before the ball; but only in one or two cases, and I never follow up the morphia injection.

From continued use of morphia a condition of excitement is liable to be

induced which is frequently mistaken for increased or continuous pain, the patient walks incessantly round the box shaking its head, etc., and if the true nature of the condition be not clearly defined more morphia is given in the hope of eventually subduing the pain; but as a matter of fact produces disastrous results. I was first induced to use cannabis indica some four years ago from reading some interesting records of its use by Professor F. Smith, A.V.D., and until that time I had relied chiefly upon opium and chloral hydrate as anodynes. I have records of many cases in which part have been treated with those agents and part with Indian Hemp, but I have no hesitation in giving a verdict in favour of the latter. To be brief, I claim for it the following advantages over opium and its alkaloid:—It acts quicker, its effects are more lasting, it does not combat the action of purgatives, and so allows the contents of the bowels to be evacuated more quickly, which being done there is usually a cessation of pain. I have also noticed that after repeated large doses of opium or morphia there has been some kidney derangement and scarcity of urine, but I have not noticed such effects after cannabis indica.

Chlorodyne.

This is another very useful agent in gastro-intestinal irritation. It is prepared from various formulæ, but in most of them chloroform, morphia, and prussic acid are the chief ingredients. It is most efficacious in cases of colic with severe spasm of the intestine, and given in doses of from one to two ounces it quickly relieves pain. It acts as an anti-spasmodic and anodyne, without the marked sedative effect of opium or cannabis indica. If flatulence be present good results follow its administration along with two or three drachms of ammonia or soda carbonate. It does not nauseate, and there is no depression after its use. If diarrhœa is present it acts as a mild astringent, but does not check secretion so violently as opium does. It is also a good carminative. In cases of spasmodic colic, where for various reasons, a strong purgative is not desirable, chlorodyne 1 oz. given with ol. lini 12 oz. has a very good effect.

Aconite.

Although aconite is probably not extensively used in the treatment of these diseases and is not strictly speaking an anodyne, it is a valuable agent in some affections. It acts upon the periphery of sensory nerves and also lessens the frequency and force of the heart's action. It is rapidly absorbed and its effects, especially upon the heart's action, are almost immediate. I have found the most benefit from its use in enteritis and peritonitis, in combination with opium, the pulse of 80 or 90 beats per minute being lowered 20 or 30 beats within an hour of the administration of m.v. of Fleming's Tincture. The fever in these cases is greatly controlled by its use, the temperature gradually falling. Its use requires the greatest care and it should always be freely diluted, and should never be given in combination with ammonia, as it is liable so combined to have a peculiar but dangerous action upon the muscles of the throat. Where there is a feeble pulse and great prostration I would not prescribe it, as its influence upon the heart's action may bring about bad results. As to its anodyne properties in other forms of intestinal diseases, its effects cannot be compared with those of the before-mentioned agents.

Ether.

Sulphuric ether possesses anodyne, and anæsthetic and stimulant properties, but it is for its anodyne and stimulant effects that it is most useful in abdominal pain. It stimulates mucous membranes and increases their secretion; it also stimulates the circulation in the intestinal walls, and excites peristalsis, arrests fermentation, and expels flatulence, and is a valuable anti-spasmodic where there is not flatulence; it can with benefit be given as

alcoholic stimulant. It is extremely volatile, and quickly evaporates, and should always be given in cold fluids. In pit horses that are, as a rule, irregularly fed and over-worked, colic and its complications is common, and if pain be acute, the animal is soon in a state of collapse, due to exhaustion and low vitality. The administration of full doses of ether in connection with opium or chlorodyne in these cases, is the only chance we have of a favourable termination.

Turpentine.

Oil of turpentine is a stimulant, anti-spasmodic, and a carminative. When swallowed, it is rapidly absorbed by mucous surfaces, it acts as a stimulant to the walls of the stomach and intestines, arrests fermentation, and expels flatulence. It is a valuable carminative, and also aids the action of purgatives. Its remote effects are dangerous, as it excites diuresis and irritation of the kidneys. In flatulence due to feeding on green clover, I have frequently given it with good effect in the following form: ol. tereb. 2 ounces, acid carbol. 1 dram, ol. lini. 12 ounces. It is, however, unsafe to repeat its administration too often; and as we have other agents a great deal safer and equally effective to use, it should not be regularly given in the treatment of abdominal diseases. In spasmodic colic, it is not an infrequent occurrence to see the animal making ineffectual attempts to urinate. This is due to the spasm of the neck of the bladder, which will generally be relieved by an anodyne or a warm water enema. This condition, however, is often mistaken for some fancied kidney derangement, and oil of turpentine in repeated doses, given with a view of causing urination, whereas nephritis and death are often caused.

Purgatives.

We now come to the other class of agents which it is necessary to use in most cases of gastric and intestinal disturbances, viz., purgatives. I say in most cases, because there are a few instances in which their administration is not absolutely essential, but as a rule we cannot consider our patient safe until the bowels have been acted upon, and free evacuation obtained. Purgatives or cathartics possess the power of cleansing the bowels and evacuating their contents, and act in various ways. They are divided as follows: Laxatives or aperients, simple purgatives, drastic purgatives, cholagogues, saline purgatives and stimulants of muscular fibre. They may be classed under the foregoing heads in the following manner:—Laxatives, ol. ricini. ol. lini; simple purgatives, aloes, aloin; drastic purgatives, ol. crotonis; cholagogues, calomel; salines, magnesium and sodium sulphates; muscular stimulants, physostigmine, pilocarpine, nux-vomica.

Laxatives.

Neither ol. ricini. or ol. lini. owing to their mild action and uncertainty, can with confidence be relied upon in the treatment of impaction of stomach or bowels, but there are instances in which the use of them is more safe than the use of stronger purgatives—for instance, in indigestion or irregularity of the bowels often accompanied by slight pain which occurs during dentition. Oleaginous purgatives are useful in removing undigested matter from the alimentary canal without griping or nausea, also in pregnancy, peritonitis, and in those cases where hernia or calculus is suspected to exist, they should be given in preference to aloes. In chronic constipation, where it is necessary to repeat the purgative several times, they can be given with safety and advantage. However, when a favourable issue is dependent upon the early action of the bowels, and where none of the foregoing conditions are suspected to exist, aloes, or other stronger purgatives should have the preference. In short, oils are very useful where, from various causes, any agent more violent in action is inadmissible. Of the two ol. lini. is most commonly used in the

horse, and is given in doses of from 10 to 20 ounces, where alone or in conjunction with tr. opii., chlorodyne, ol. tereb., or acid carbol. It is bland and unirritating, and its action upon the bowels is chiefly mechanical.

Aloes and Aloin.

Aloes (of which there are several varieties) is the purgative most frequently used in the horse. The varieties are the Barbadoes, Cape, Socotrin—the first being the most reliable and best, it contains more of the active principle (aloin), is more certain in its effects, is not liable to gripe, and does not possess the amount of impurities and insoluble resinous matter that the other kinds do. It has long been used in the treatment of the diseases of the stomach and intestines, but there is a great difference of opinion as to when and under what circumstances it should be given or withheld. Upon entering the stomach, aloes is dissolved by the gastric fluid, and is emulsified by the pancreatic juice in the duodenum. It acts chiefly upon the large intestines, and is rather slow in action; it also enters the blood and causes increased circulation in the pelvic viscera (notably the uterus and bladder). Whilst in the intestines it increases peristaltic action and secretion; it also increases biliary secretions, and may cause diuresis. The evacuations after its use are copious, but are not so watery as those caused by gamboge or croton. If given in too large doses it will cause tenesmus, bleeding, and superpurgation. When given alone aloes is liable to cause griping and nausea, but these unpleasant effects are lessened by the addition of such agents as ginger, belladonna, or cayenne.

Owing to its many therapeutic properties, it is without doubt one of the most valuable agents in the pharmacopœia, but its use in the stomach and intestinal cases requires the greatest care. Many cases are probably lost through its omission, whilst in others a fatal termination is induced, or hastened by its use. Its action upon the uterus renders it very unsafe to use in pregnant mares, and owing to its excretion by the mammary gland, griping and nausea are likely to be produced in the foal when given to suckling mares. In all cases where a feeble pulse, exhaustion, or signs of fever or inflammatory action are present, aloes should not be given. I frequently meet with this kind of case in hard worked and improperly fed pit horses, and since discontinuing the use of aloes and resorting to other means of emptying the bowels, I have had better results.

There is a great difference of opinion amongst practitioners as to the best way of administering aloes, some advocate its use in balls others always give the solution. The proper way to prepare the bolus is also a subject of controversy, these minor details may be considered out of place here, but I am satisfied that the action of an aloetic purgative depends in a great measure upon the way it is prepared and administered. I am in favour of the bolus, it is certainly cleaner, more pleasant for the horse to take, not so nauseating, and is handier than the drench. The solution is not so certain in its effects, as if a temperature over 150F. is reached in dissolving the aloes the active principle is destroyed. The mass for bolus should be prepared in small quantities and often. I find that the best way is gently to warm the aloes in a water bath along with a third of the quantity of glycerine, a dram of ginger to each ounce of aloes, and to run this mixture when cooling into gelatine capsules and hermetically seal them. In this way it will keep soft, and upon reaching the stomach soon undergoes solution and is a great contrast to the ball which is made of aloes boiled up with soap or ginger and rolled in a paper when cold, and kept in a dry place until it becomes as hard as a brick. I have seen many of this type and have heard surprise and disappointment expressed at their slow effect. The doses must be varied according to the size and condition of the animal and to the nature of the impaction, but for all ordinary

purposes from four to six drams are sufficient for country horses, and I am told that town dray horses require 8 to 10 drams to purge them. As to the time required for a full dose of aloes to act nothing very definite can be stated, for the action is influenced by a great number of circumstances, among which are breed, temperament, and nature of food, quality of aloes, and the condition of the walls, stomach and intestines. If there is much distension and paralysis of muscular fibre the action is very much protracted. I have generally found that in the average case from 9 to 12 hours will elapse before there is any action; moderate exercise where practicable and admissible will hasten it.

Aloin.

The active principle of aloes was discovered in 1850 by Smith, of Edinburgh, but notwithstanding the long time that has elapsed since then its use in veterinary medicine cannot be said to have become common. The medical profession, however, have more universally adopted its use. Mr. Finlay Dun, and Mr. Dollar, of London, have both used it extensively and speak in its favour. Personally, I have not used it, and I cannot say much about it.

Croton Oil.

This is the expressed oil of the Croton Tigilum, and is a drastic purgative, causing copious and watery evacuations. It is believed that the active principle of the oil is developed in the intestines by its saponification; owing, however, to its violent effects and its liability to cause irritation and inflammation of mucous membrane of the alimentary tract, its use in the horse is most unsafe, and I do not suppose that it is much used by the qualified veterinary practitioner, but that it is often an ingredient of the purging draught of the empiric (which is given to both horses and cattle alike), I think there can be no doubt. I have, upon several occasions, found on *post-mortem* examinations inflammatory patches in the stomach and intestines, after drenches of this description have been given, and where no other cause was traceable. I have upon a few occasions used it, but have now, for some time, discarded it altogether.

Calomel.

Sub-chloride of mercury or calomel acts as an indirect cholagogue, it greatly increases the elimination of bile, but not the secretions. It is very useful in constipation or impaction, and in non-elimination and re-absorption of bile—a form often seen in pregnant mares. I have not found any particular advantage from its use in ordinary cases, but I believe that good results follow its combination with aloes in other morbid conditions, such as lymphangitis, etc.

Magnesium Sulphate (*Epsom Salts.*)

Although this is generally used as a purgative for cattle and other ruminants, it possesses no mean value when used as a purgative in the horse. It causes an increased outpouring of the secretions from the intestinal walls, and prevents re-absorption of bile from the duodenum, but does not increase biliary secretion. In gastric or intestinal impaction with urgent symptoms and acute pain, and where the main object is their early evacuation, the sulphate of magnesium is not to be relied upon, except in pregnancy or in other conditions unfavourable to the use of aloes or physostigmine; but where the symptoms are constipation, drowsiness, yellowness of the visible mucous membranes, slight colicky pain, and where no urgent and distressing symptoms are exhibited, it is a most useful agent. I have found that in five or six hours after the administration of from four to six ounces, in drench or a warm thin mash, that there have been copious evacuations, and that the yellowness of the membranes has begun to disappear.

Sodium Sulphate.

This agent is similar in its action to magnesium sulphate, but that it increases biliary secretion and peristalsis. It is given in about the same dose as magnesium sulphate.

Physostigmine or Eserine

Is an alkaloid derived from the Calabar bean, and is what may be termed a modern drug. I believe that it was first brought prominently before the notice of the veterinary profession in this country by Professor F. Smith, in some reports made upon its use published in *The Veterinary Record* in 1886, and since that time M. Pichel, on the Continent, and others have made records of its use. During a period of 12 years (1885 to 1892), Hirsmen used eserine in his treatment of 312 cases of colic, and out of that number only eight proved fatal, whilst out of 119 cases treated without its use, 41 terminated fatally. Whether he uses the word colic in the strict sense, and only applies it to those cases of spasm of the bowels, with or without flatulence, or whether, upon the other hand, he has so designated every abdominal case that he treated, is not clear, but I should venture to think that he intended it to signify cases of the first description, for had he used eserine indiscriminately in all cases, I do not think that he would have had such a large percentage of good results.

Eserine acts directly upon the fibres of both voluntary and involuntary muscles, it increases peristaltic action, and forcibly expels the contents of the bowels, it does not materially increase secretion unless combined with pilocarpine. It is without doubt quicker in action than any other purgative, and where admissible its results are excellent. I have formed this opinion after having tried it in all kinds of cases. It is used in veterinary practice in the form of hypodermic, intra tracheal, and intra venous injections in horses, varying from one to three grains of the sulphate and hydrobromate, and is prepared in both solutions and tablets. It has not, however, found universal favour, and many practitioners deny its use in cases where, had its true action been understood, it would have been withheld. In cases of colic with prolonged spasms of the bowels, its almost immediate effect is most marked, the peristaltic movement being normally restored and pain relieved. In impaction of the colon with distension and inertion of the walls, it is likewise efficacious in bringing into action the longitudinal and transverse fibres and mechanically forcing the contents towards the rectum. The effect of pilocarpine is to stimulate glandular secretion, notably in the salivary glands. It is thought to exercise a similar effect upon the pancreas, and thereby cause an out-pouring of secretion from the glands into the intestines, so aiding in a mechanical manner the action of the eserine. The dose of physostigmine is given in some of our text-books as 1 to 2 grains. I have given the former dose in various ways, but never got any action from it. From 2 to 3 grains will usually act in from 25 to 45 minutes, in an ordinary case. Violent rumblings are at first heard, quickly followed by the expulsion of flatulence and fæces with considerable force. I have given larger doses with no untoward results, although violent expulsion of fæces and some degree of straining have lasted for some hours. If there is reason to believe that the impaction is dry and hard, pilocarpine 2 to 3 grains should be used in conjunction, as it will materially aid the eserine.

Before proceeding to use these remedies, a thorough investigation as to the cause of the attack and a proper examination of the patient should be made, otherwise we may have cause to regret their use. For instance, the following are a few amongst a number of conditions in which I should not advise their use: gastric impaction, acute gastritis, obstruction from calculi, hernia, volvulus, intussusception, and in enteritis. In gastric impaction I think it unsafe on account of the liability to cause rupture; the muscular walls are brought into such powerful action that, if the stomach be full, the contents

cannot pass through the pylorus fast enough, and rupture may result. They may also excite vomiting in gastritis and enteritis, and, in fact, where any inflammatory action is supposed to exist; they should not be administered in hernia, calculus, volvulus, etc., and in pregnant mares the reason why they should not be used is obvious. Of course, I am aware that it is frequently difficult to definitely locate the seat of obstruction and to determine the exact cause; but what I mean to imply is that eserine and pilocarpine should not be used where we have reason to suspect any of the foregoing conditions. It may, however, with safety be used in spasmodic and flatulent colic and impaction of the colon, and it is in the last-named affection that its good effects are most marked.

When I relied on aloes and other purgatives in the treatment of those cases, it was no uncommon thing to meet with instances in which there was no action of the bowels for two or three days after six drms. of aloes had been given, but since I have substituted physostigmine and pilocarpine I have had none of these protracted cases. I have records of two cases of impaction of the colon—one in March, 1889, and the other in October, 1890—where the bowels resisted the action of full doses of aloes and oil, the first for four days and the second for three days, but these cases were in cart horses, and were due to feeding upon coarsely-chopped straw with wheat and bean meal. In the first case laminitis supervened on the second day; both cases ultimately recovered, but were of long duration, the bowels being in an irritable state for some days.

As showing the difference in the results between this treatment and that by the use of physostigmine, I will give the record of a case which occurred in September of last year. On September 18th, 1894, at 4 p.m., I administered 2 grs. each of pilocarpine and physostigmine subcutaneously to a four-year-old cart gelding suffering from impaction of the bowels, with much tympany and severe pain. He had been standing in for a slight lameness, and had been over-fed upon coarsely-chopped wheat-straw and bean-meal. When I saw him there had been no passage of fæces for about seven hours. At 4.50 p.m. (50 minutes after the administration of the injection) there was a lot of rumbling immediately followed by a large amount of fæces and flatulence. During the next hour there were two more evacuations larger in bulk and much softer than the other; and between that and 7 a.m. next morning there were six evacuations, amounting altogether to an incredible quantity, and all traces of tympany and pain had disappeared. The only other treatment consisted of a few doses of chloral.

As to the various forms of injection, I have used them all, but generally adopt the subcutaneous. In some cases I have had the quickest action from the intravenous mode, but I do not think that there is much difference if the drug is reliable and the dose sufficient.

Nux Vomica.

The powdered seeds of the strychnos, nux vomica, may be termed a gastric intestinal nerve tonic. In cases of gastric impaction and obstinate constipation of the bowels, it is a most useful agent in combination with aloetic or saline purgatives. In the former condition, especially when the contents of the stomach are of a dry nature, from 2 to 3 drms. given with 5 or 6 drms. aloes in ball, has generally a very good result. Given in small doses along with vegetable bitters, such as gentian or ginger, it is very useful in maintaining a normal action of the bowels after the effects of a purgative have passed away. It is given in various doses, ranging from 30 grs. to 2 drms. according to the action required.

Having in the foregoing pages endeavoured to give the therapeutic action of the various agents named therein, and to a certain extent given some

indication of their use, I shall now proceed to point out certain things that should guide us in their selection for the treatment of these cases. It will be seen that their administration, without due regard to either their nature or action, cannot be atte nded with any but uncertain results. In the first place, it is necessary that we should proceed to ascertain the actual cause of the attack. For this purpose we should first carefully examine the animal by noting the position, state of the pulse, temperature, respiration, visible mucous membranes, state of the abdomen, surface temperature, and the nature of the excreta, if any. This is not, however, sufficient to warrant us in arriving at a correct diagnosis, and we should further ascertain something of the history of the case—the details of feeding and watering, and whether any recent changes in either; the number of previous attacks, if any; the times at which they have occurred; the nature of the work, and especially of the last performed. With a knowledge of these details we can then draw our own conclusions as to whether it is a purely accidental attack, or whether there is any predisposition to abdominal disease. For instance, if this is one of a series of attacks we may suspect calculus, and so on. Every attack has its predisposing and exciting cause or causes. Among the predisposing may be mentioned idiosyncrasies, diseases of the teeth, salivary glands, linings of the stomach, and intestines, whilst the exciting causes may be ravenous feeding, imperfect mastication, errors of diet, over engorgement with succulent or dry food, overwork and exposure to wet or cold, also the presence of irritant poisons. In all abdominal diseases, pain, restlessness, a perverted action of the bowels, are common features; but the varying intensity of these phenomena, associated with other symptoms, have to guide us in our diagnosis. Having formed an opinion as to the cause and nature of the illness, we must now proceed to treatment and to adopt such measures as are best calculated to restore the various organs to their normal condition. Nothing should be done hurriedly and without consideration. If an animal is in extreme pain, and has not passed fæces for some hours, we should not fly to aloes or physostigmine all at once, but carefully examine the patient, and by noting the features presented during such examination a proper treatment will suggest itself.

No matter what we do, we know that it is impossible to be always right in diagnosis and treatment, but bearing in mind the foregoing rules will materially help us. I also think that if more opportunities were taken of making *post-mortem* examinations, many errors which we commit would be avoided.

In conclusion, I must acknowledge quotations upon the action of medicines from the works of Mr. Finlay Dun and Dr. Mitchell Bruce, whilst abstracts from the reports upon the action of physostigmine and cannabis indica have been taken from various veterinary periodicals, viz., *Veterinary Journal*, *Veterinarian*, and *The Journal of Comparative Pathology and Therapeutics*. The principal conclusions, however, have been based upon personal observation and facts, and for which, if erroneous, I must accept the responsibility.

Discussion.

The PRESIDENT invited discussion on Mr. Green's paper.

Mr. GIBSON did not think many would be opposed to Mr. Green's arguments as a whole. He himself had not used much chloral hydrate with horses, but he had used it in the case of a cow with milk fever and he had found it very serviceable. He was a great believer in turpentine. In bowel affections, he used a great deal of mustard and hot water.

Mr. GREEN here pointed out that he had only been dealing with the medical part of the treatment, although he admitted that surgical treatment was necessary.

Mr. OLVER prefaced his remarks by saying that they had really very

little to discuss because Mr. Green had dealt with those drugs in a manner which they could not criticise. They all appeared to him to be useful drugs, and, so far as he could judge, Mr. Green had placed them all in their proper places. With the exception of Indian hemp, he had constantly used the bulk of them. There was one anodyne which had not been mentioned, and which was very valuable in cases of gastric irritation, and that was hydro-cyanic acid. He once tried to kill with it and cured instead, and since then he had used it very often. As regarded sulphate of magnesia, he used more of it every year he lived. They very frequently were inclined to use too large doses of purgatives or aperients where smaller ones would act equally well and with less drastic results, and in the case of nux vomica small doses repeated was often preferable to very large doses. As to physostigmine, at one time he used it extensively, and he still used it occasionally believing it to be a very valuable drug. He thought small doses were of no use whatever, and until he took to injecting intravenously he never had any satisfactory results; then, instead of having to wait 40 or 50 minutes, he got a result in 4 or 5 minutes. He had always thought that veterinary surgeons failed more in their knowledge of drugs than any other matter. It was one of the things they ought to study much more extensively than they did, but unfortunately after giving a dose they had to leave and could not watch the case as they ought. The so-called action of many of the drugs given in their pharmacopœia did not apply to their patients. The more they studied the question, the better for the advancement of the profession.

Mr. GOOCH, before attempting to say anything, had to thank Mr. Green for once more bringing before them the all important subject of gastric and intestinal mischief. There was one thing in which he hardly agreed with the essayist. He understood Mr. Green to say that in conjunction with four grains of morphia, he gave two grains of atropia. He (the speaker) had never tried it in such large quantities, and he should think that an excessive dose. His dose was from four to five grains of morphia and two-fifths of a grain of atropia. He had never had any good results from the use of aconite and he thought it a very dangerous remedy to use on any occasion, because they could not say at what strength they had their aconite. He was rather old-fashioned with regard to turpentine. He believed that in turpentine they had one of the best, if not the best therapeutic agent in the whole pharmacopœia in cases of intestinal trouble. He rarely ever went to a case without giving turpentine, but as a rule, before examining a horse, he gave him a subcutaneous injection of morphia and atropia. He agreed with Mr. Olver as to the value of sulphate of magnesia.

Mr. OLVER said he should like to ask a question which had hitherto escaped his memory. How was it that Scotchmen considered eight to ten drachms of aloes a dose, whereas Englishmen considered four drachms a dose.

Mr. BURCHNALL thought their first object should be to get an action of the bowels. His sheet anchor was physostigmine; he had used it ever since it came in. It was no use giving physostigmine after opium, and he had discarded opium altogether. If he used anything as a sedative, it was chloral hydrate. He was a great believer in turpentine. He never gave a sedative until he had given physostigmine. He administered it hypodermically, in grain doses only.

Mr. STANLEY thought stimulauts were often as good as any of the drugs they gave. As far as colic and inflammation of the bowels were concerned, he did not think, with the drugs at their command, that they ought to lose a single case. His practice was to give a dose of physic at once, and then assist nature by stimulants such as mustard and water. He thought the finest drug they had was chloral hydrate. It was rather expensive but it was the best thing they ever had.

Mr. CARLESS had very little to add to the discussion. He thought it was very necessary to find out the cause before administering physic. He believed the teeth was very often the chief cause of stomach trouble.

Mr. SLIPPER having offered a few observations,

Mr. CROWHURST agreed with the remarks of Mr. Carless, as to finding out the cause, as every case ought to be treated upon its merits. He was very fond of tobacco smoke enemas.

Mr. EDWARDS said he had been interested in Mr. Olver's question as to what constituted a dose of aloes, and he thought the answer which students gave depended very much if they had had private "grinds" with professors, and if so with which professors. Some professors would not give more than four drachms of aloes, whilst others would give six, eight or ten drachms. A man who had been in the habit of giving four drachms would hardly have sufficient courage to give a larger dose.

Mr. BURCHNALL said he had heard given as the reason that more aloes was given in Scotland to a dose than in England because the Scotch hay was so much coarser, and also much drier.

Mr. STANLEY thought the fact was due largely to the atmospheric conditions.

Mr. GOOCH attached a great deal of importance to the condition of the soil and the water.

The CHAIRMAN, continuing the discussion, said that, personally, he had to thank Mr. Green very much for coming there that afternoon in answer to his request for a paper. With regard to the value of the different agents for treating intestinal diseases, he quite agreed with those gentlemen who gave a dose of physic to begin with. He thought it saved a great deal of valuable time. He never thought of giving as little as four drams of aloes, unless to a pony. He believed turpentine to be a very valuable agent. There was one property of turpentine which had not been alluded to during the discussion, but which was an important one and should not be omitted. It was a very valuable antiseptic. With regard to sulphate of magnesia, the longer he lived the higher opinion he had of it; it was one of the most valuable medicines they had. Nux-vomica was an agent he had a great liking for. Physostigmine he did not use as greatly as some practitioners appeared to do, because when he had used it he had a large proportion of ruptures, which he had been bound to attribute to the use of that drug.

Mr. GREEN then briefly replied upon the discussion. He said the opinions expressed were just what he wanted. Mr. Olver was rather surprised he had not included hydro-cyanic acid in his list, but he used it as an ingredient in chlorodyne which he made himself. He agreed with those who attributed the largeness of the Scotch dose of aloes to the coarseness of the forage. He thought they might be a little too venturesome in giving turpentine in every case. As to the antiseptic properties of turpentine, it was an oversight on his part in not having alluded to them.

The HON. SECRETARY (Mr. H. J. Dawes) moved a vote of thanks to the President for his inaugural address, and asked him to allow it to be printed in full.

Mr. OLVER seconded the resolution in complimentary terms, and it was carried.

The PRESIDENT, in responding, thanked them very much for the honour they had done in showing so much appreciation of his efforts. He proceeded to propose a vote of thanks to Mr. Green for his interesting and instructive paper.

This was seconded by Mr. CROWHURST and carried unanimously, and Mr. GREEN having suitably responded, the proceedings terminated.

H. J. DAWES, *Hon. Sec.*

LINCOLNSHIRE VETERINARY MEDICAL SOCIETY.

A MEETING was held at the Angel Hotel, Peterborough, on Wednesday, July 3rd, 1895, Mr. T. A. Rudkin, vice-president, in the chair. The other members present were Capt. Russell, Grantham; W. H. Brooks, Leadenham; H. Kidd, Melton Mowbray; W. G. B. Dickinson, Boston; Gooch, Stamford; J. W. Gresswell and J. Mackinder, Peterborough; P. A. Clarke, March; A. Lennox, Crowland; T. Holmes, Bourne; and J. A. Robinson, hon. sec., Market Deeping. Professor Williams, Edinburgh; Rev. Peter Royston and Dr. Benson, Market Deeping, were present as visitors.

On the motion that the minutes of the last meeting be taken as read, Mr. Gresswell asked how it was that the report of the last meeting had not appeared as usual in the *Veterinary Record*.

The SECRETARY replied that he had used his discretion in sending the report of the meeting to the VETERINARY JOURNAL, when it was afterwards send to the *Record*. The editor of that paper replied that he was unable to publish anything that had appeared in a monthly paper, as the *Record* existed for the purpose of disseminating professional news as rapidly as possible. He (the Secretary) had observed, however, that this rule had not always been adhered to in the case of reports of other societies.

The minutes were then taked as read.

Letters of apology for non-attendance were read from Professors Penberthy and Axe, Dr. Fleming, Capt. Hayes, and Messrs. Hartley, Howse, James Smith, Santy, Freer, and others.

The SECRETARY said he had also received several letters from the secretaries of other societies in reference to the action of the Board of Agriculture, but as the matter had now been taken up by the Council they were laid on the table.

Captain RUSSELL said it gave him great pleasure to propose that Mr. T. A. Rudkin be elected president of the Society. They all knew the worth of Mr. Rudkin, he was always a good fellow whenever they met him, and he was sure they were prepared to appreciate his services to the Society by electing him president.

Mr. GOOCH said that no one regretted more than he did the death of their late president, Mr. Goodall, and he had great pleasure in seconding the election of Mr. Rudkin to the vacant chair.

Mr. RUDKIN was unanimously elected, and in returning thanks said he felt that the Society had done him a very great honour, he only regretted that it had been necessary to elect a president at that meeting. He would do all he could to further the interests of the Society.

On the proposition of Mr. ROBINSON, seconded by Mr. GRESSWELL, Mr. J. A. Clarke was elected vice-president in the place of Mr. Rudkin.

On the proposition of Mr. BROOKS, esconded by Mr. DICKINSON, Captain Hayes, Melton Mowbray, was elected a member of the Society.

Captain RUSSELL said that in accordance with the resolution passed at the last meeting he had forwarded £5 to the British Institute of Preventive Medicine.

Grunting an Unsoundness?

The SECRETARY then read the following letter from Mr. Howse, Lincoln:—

SIR,—I find I am unable to accept your invitation to the meeting of Lincolnshire V.M.S. at Peterborough to-morrow. I deferred writing until to-night hoping I might definitely say "yes" because I wished to take the opinion of the members present on a question that is somewhat important to examiners of horses.

It has been said by two high authorities in London—whose names I cannot use, because private was marked on a reply letter—that horses that "grunt" at the stick or when ridden are held by them to be sound in the wind if unaccompanied with roaring or whistling.

This is not generally accepted, and I for one dispute its correctness—because :—

1. Sound horses do not grunt.
2. "Grunters" almost invariably become roarers or whistlers.
3. There seems to be some affinity between the two conditions—grunting and roaring or whistling—by both being frequently found existing together, and so far as my experience goes, not in association with "broken wind."

I mean to ask Mr. Hunting to ventilate the question, so that it becomes settled one way or other. Messrs. Tattersall say it is a question for the veterinary profession, and truthfully so, and a settlement ought to be arrived at.—Faithfully yours,

HENRY HOWSE.

July 2nd, 1895.

Some discussion followed, and it was very much regretted that want of time did not allow the matter to be fully gone into at that meeting, but most of the members appeared to have the same views on the subject as those stated in the letter.

Mr. LENNOX proposed that the matter be adjourned to the next meeting, and that Mr. Howse be requested to bring forward the subject at that date. This was seconded by Captain Russell and adopted.

Votes of Condolence.

The PRESIDENT said it was with very great regret that he rose to propose that a vote of condolence be passed on the death of their late president, Mr. Goodall, whose loss they all so deeply deplored. He was a man of great ability and sterling worth, and they little thought at their last meeting that they would never see him again. He was always "Hail fellow well met," jolly good company, and a good friend to his profession. In the interests of science, he asked that a *post-mortem* examination should be made of his body, and there was no doubt his death was caused more or less by his unluckiness. He had a very bad fall some years ago, and was also struck by a foal, and it was never thought that he could possibly get better. He deeply regretted they had lost him as president. It would be very difficult to replace him; he was a man highly thought of, both by his clients and his professional friends. They would all recollect the excellent address he gave them when he became President of the Society. He proposed that they send a vote of condolence from the Lincolnshire Veterinary Medical Association to Mrs. Goodall on the death of her husband, their late President.

Captain RUSSELL said he should be glad to second the resolution. Mr. Goodall had been known to him ever since it had been his privilege to settle down amongst them, now some 23 or 24 years ago. He had always found him what he particularly esteemed in a man—he was perfectly straightforward. He was as straightforward a man as ever walked this earth. He came of a good stock, was always looked up to in his profession, and they all regretted he had passed away from them. He thought it was due to his widow that they should express their regret at his loss.

The resolution was unanimously adopted.

Mr. GOOCH said there was another letter of condolence which should be sent. They all regretted the death of their late member, Mr. Thomas Greaves, of Manchester. He well remembered when Mr. Greaves was President of the Association, that he did a good deal for them. No man in the profession had done more for the spread of veterinary friendly meetings than Mr. Greaves. He proposed they send a vote of condolence to his nearest relative.

Mr. MACKINDER seconded and said when he (the speaker) was president of the Society Mr. Greaves was one of the best friends of the Society, and supported them on every occasion.

Professor WILLIAMS said he had had the privilege of meeting Mr. Greaves at many of these meetings all over the country and no man took more interest

in such institutions than Mr. Greaves, not only in England, but in Scotland. He had not only met him in Scotland but at the North of Ireland Veterinary Association. He was a devoted and enthusiastic member of these Societies because he believed they promoted not only an increase of scientific information but good friendship among members of the profession. He worked hard all his life, and he thought it would be a graceful thing to send a letter as suggested.

Jubilee Memorial Fund.

With regard to the proposed subscription to this fund Mr. GOOCH said he thought this was a memorial to which every veterinary surgeon ought to subscribe, and he thought they would be out of place as a Society if they did not subscribe out of their funds. He believed they would be the only Society that had not sent in a subscription, and he did not think they would miss the amount he proposed at the last meeting at Grantham. He should propose that £5 be sent.

The PRESIDENT asked definitely what was to be done with the money.

Mr. GOOCH said it was definitely settled that it should form a bursary or scholarship open to all the colleges.

Capt. RUSSELL thought that if it took that form it would be of interest to them. He thought they ought to commemorate the action of those men who had the pluck to form the profession, and if the contributions were put into the form of a fund as described by Mr. Gooch, it would be a very good thing. He had heard other suggestions as to a medal to hang on the watch chain, and that kind of thing, which he thought useless.

Mr. GOOCH thought Capt. Russell might be thinking of the Steel Memorial Fund, in connection with which a medal was to be given.

Capt. RUSSELL said he understood it was to place effigies of these men who had formed the profession. He finally seconded Mr. Gooch's proposition that £5 be sent from this Association. Carried *nem. con.*

Texas Fever.

Professor WILLIAMS then read an interesting paper on Texas Fever.

The PRESIDENT said he was sure they were all very much obliged to Prof. Williams for his paper. They knew there was a large amount of American cattle brought into England, and some day they might be busy with this Texas fever, but he thought it might be modified by some protective inoculation in years to come.

Capt. RUSSELL asked whether, since it appeared that a tick was the cause of the disease, steps had not been taken to prevent the spread of the disease by external dressing, with a view of killing the parasite. He should also like to ask the Professor whether it had been proved beyond doubt that this parasite did not exist upon Northern cattle before they came upon the ground that the Southern cattle had been upon.

The PROFESSOR said he had no doubt the method of procedure would be to destroy the ticks on the Southern cattle before they travelled North. That seemed to be the common sense view of the matter. If they could do that there would be no danger whatever. He thought it had been proved that the Northern cattle were not affected until they came upon the pasture of the Southern cattle. He had had some experience with the tick, and had proved that what they called "trembling" in Scotland was due to inoculation by a tick. He described the method by which he discovered this, and said the experiment had failed in one particular, but he meant to conclude it this year. In answer to Mr. Holmes, the Professor said the disease had been induced by the cultivation of the bacteria.

After further discussion the President proposed a vote of thanks to Pro-

fessor Williams for his interesting paper, and expressed the hope that this was not the last time he would visit them.

Professor WILLIAMS, in reply, said he was always glad to do anything he possibly could for the benefit of his profession. It was the only profession he had ever loved, and he had devoted a fairly long life to it, and he was still able to study the new phases of scientific thought. He was fond of doing this, and he read a great deal, as he was obliged to do to keep abreast of the new discoveries that were continually being made in the world of medicine. He was very pleased if he had been of any service to them.

Mr. HOLMES displayed a very interesting specimen of a dilated œsophagus, which was afterwards presented to the museum of the New Veterinary College.

The meeting then concluded with a hearty vote of thanks to the President for his conduct in the chair, and the members afterwards dined together, the usual loyal, patriotic, and professional toasts being duly honoured.

J. A. ROBINSON, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE Quarterly Meeting of this Association was held at the Grand Hotel, Manchester, on Friday, July 5th. The President (Wm. Dacre, Esq.) in the chair. About 20 members and friends were present, among whom were the following:—Dr. Delépine, Messrs. J. B. Wolstenholme, Alec Lawson, R. Hughes, Munro, Wm. Woods, Ackroyd, Laithwood, Faulkner, R. C. Edwards, Ferguson, Jos. Hall, Wm. Hall, F. B. Pearson, E. E. Wood, E. Gubbins, and H. D. Chorlton (Secretary).

The minutes of last meeting were taken as read, upon the proposal of Mr. ALEC LAWSON, seconded by Mr. E. FAULKNER.

The SECRETARY read a letter from the Eastern Counties Association, thanking the members of the Lancashire Veterinary Medical Association for their support of Mr. William Bowers' candidature.

The SECRETARY read letters of regret for non-attendance from Mr. W. A. Taylor, Professors McCall, McFadyean, Penberthy, &c.

Mr. FAULKNER proposed that Mr. King, M.R.C.V.S., Manchester, be elected a member of the Association. Mr. WOLSTENHOLME seconded the proposal. This was carried unanimously.

The PRESIDENT wished to say a few words on the deplorable loss this Society has sustained in the death of Mr. Peter Taylor. His connection with the Society was of the happiest, and we have still before our minds' eye his genial presence. We still hear his ringing voice in vigorous and emphatic denunciation of wrong, or raising the sympathies of his listeners when speaking on the subject dearest to his heart, that of the Benevolent Fund. These memories, gentlemen, will pass from us like a dream, but Mr. Peter Taylor has left us something more substantial to keep his memory green. He has handed down to us the example of a professional man, loyal to his colleagues. Mr. Taylor was one in whom every confidence could be placed, and in consultation, his straightforward and unhesitating opinion was of great comfort and support in difficult cases. Many honours have deservedly fallen upon his shoulders during the past, and no man, from a political point of view, has been more useful to this Society and the profession generally than Mr. Taylor, and I am quite sure he had always the very utmost confidence of this Society. To conclude, I ask you to mourn with me the loss of a valued member of the Society, a genial companion, and an ornament to his profession. In addition, I would ask one of you to rise and propose that a letter of condolence be written to his family, and, moreover, that this letter should be

something rather more than an ordinary letter, that it should be in the shape of an illuminated vellum letter of condolence. Mr. Taylor has left a large family, and such a memento of him would, no doubt, be prized by them in future. Gentlemen, with these views I hope you will carry out the suggestion I have made.

Mr. FAULKNER: I desire to second our president's proposition, and should not like this occasion to pass without paying my tribute of respect to the memory of the late Mr. Peter Taylor. For some twenty-five years I had the privilege and pleasure of knowing him, and feeling that in times of difficulty he was ever ready to afford a sympathetic hearing and render genuine professional support. I am sure that we, as also the members of the veterinary profession who are not of this association, but had the benefit of his acquaintance, regret the necessity which has arisen for us to do that which we are now doing; but of him it may fairly be said "by precept and example he did his duty as a professional man, and undoubtedly left our profession better than he found it," and, to my mind, no greater tribute can be paid to his memory than to know and say that he did what was right and proper by his fellow-practitioners, as also the profession at large. He was a man rich in sterling honest principle, and there is no room for doubt that what our President has said is the truth, to which one feels a pleasure in testifying, and expressing regret that our old friend should have been cut off only too soon, and left us the poorer in consequence. I wish to associate myself with the President's suggestion, that a letter of condolence, engrossed on parchment or vellum, be sent from this association to the widow and family of the late Dr. Peter Taylor, as an evidence of our respect for his memory.

Mr. WOLSTENHOLME said, for some time past, it has been borne in upon me the fact that we have a great lack of practical papers and an exhibition of specimens at our meetings, and also in the other veterinary medical societies. It has occurred to me that if this (the Lancashire Veterinary Medical Association) could approach the Yorkshire, and say we will set aside two extra meetings in the year, the one in Lancashire (Manchester), and the other in Yorkshire (Leeds), that it should be distinctly understood that practical speaking be limited to ten minutes, I think if this could be done, it would break up new ground, and add new interest to these societies. What with being mixed up with political and other meetings, the practical and pathological get pushed into the background.

Mr. ALEC LAWSON, in supporting, said Mr. Taylor had acted towards him more like a father than anything else. He always had an agreeable manner, especially in consultations with him, and he always took the opportunity to help you in difficulties. He said he and all the members would miss him very much.

Professor DELÉPINE then read a most interesting and instructive paper on "The Prevalence of Tuberculosis in the Domesticated Animals," *e.g.*, cattle, horse, pig, sheep, goat, dog, cat, and birds:—

The Professor, after alluding to the large number of vertebrates which are liable to tuberculosis, explained that he would limit his remarks to the prevalence of tuberculosis among those mammals which have been domesticated. The fact that tuberculosis was frequent among domestic animals is of importance, not only because the flesh and milk of several of these animals are used for food by man, but also because many of them come in more or less direct contact with man in farms, in towns, and even in ordinary dwelling-houses. For if it is well proved that dried and pulverised tuberculous products of human origin can infect the lower animals when mixed with the air they breathe, it is not less probable that the reverse is true.

The lecturer did not, however, wish to discuss the question of transmissibility of tuberculosis from man to the lower animals, and from the lower

animals to man, a subject which he thought was well understood now, and on which he had previously lectured before the Association. Among the mammals living in our midst, several have for a long time been supposed to be refractory to tuberculosis, *e.g.*, the horse, the goat, the dog, and some others. This immunity is, however, more apparent than real, and may in most cases be explained by one or the other of the following three circumstances :—

1st. Some kinds of animals by their mode of life are more exposed to infection than others, thus cows kept in ill-ventilated byres in towns are much more exposed to infection than sheep or goats living in the open.

2nd. Some animals respond to the experimental tests of inoculation differently from what others do. Thus subcutaneous inoculation gives rise to tuberculous lesions more easily in the guinea-pig than in almost any of the other animals which are also liable to tuberculosis.

3rd. For different animals tuberculous lesions affect different types and distribution. It is only necessary to mention the differences observable in the horse, cow, and pig, to show the importance of this as a possible source of error, especially in days gone by.

The following statements referring to the prevalence of tuberculosis in each kind of domestic animals are based partly on statistics chiefly collected for public purposes by observers such as Jölme, Ostertag, Bang, Lydkin, Arloing, Nocard, McFadyean, &c., and partly on observations made by the lecturer in the last few years, during which he has been able to see instances of non-experimental tuberculosis in most of the domesticated animals.

Cattle are, with man, the mammals the most liable to tuberculosis.

By putting together a few of the figures collected in England, France, Germany, Denmark, and Holland, and giving the number of tuberculous animals in over 600,000 heads of cattle, it is found that over 16 per cent. were affected. One is certainly not far wrong in saying that out of every 10 cows one or two are certainly tuberculous. Yet this statement must be qualified, for there are districts in which tuberculosis is almost absent, whilst in others it is so prevalent that a non-tuberculous cow is the exception. This is specially true of large towns, where milch cows are often kept in infected dairies. In such dairies three to six, seven, or even eight cows out of ten are tuberculous, statistics to that effect have been collected not only in France and Germany, but also in England and Scotland.

The ways in which these cows become infected are evident enough if the distribution of the tuberculous lesions are kept in mind. The air passages and the alimentary canal are undoubtedly the paths through which the bacilli generally penetrate into the organisms, either with contaminated air or with contaminated food. Infection through the genito-urinary tracts, the udder, the skin, though possible, is undoubtedly of rare occurrence.

It is evident that infection in most cases takes place after birth, the supposed share of heredity is now more than doubtful. Nothing is more convincing in this respect than the statistics relating to the prevalence of tuberculosis in calves. From returns obtained chiefly in Germany, Denmark, and France, and based on the examination of more than 2½ millions of calves it may be said that not more than 0·03 per cent. are effected, *i.e.*, that not more than three calves out of 10,000 are tuberculous. From certain statistics collected in Saxony it is evident that however small the number of tuberculous calves is, that number is gradually increasing.

Swine are not generally supposed to be very liable to tuberculosis, but we have more and more evidence to show that this is not quite a correct impression. Most German returns show that at least one pig out of every 100 is affected with tuberculosis, and in some cases one pig out of 60. In Saxony the percentages were in 1891, 1·07, in 1892, 1·37, and in 1893, 1·64, a gradual increase similar to that which has already been noticed in connection with

cattle. By putting together statistics collected in Germany, Holland and France, and relating to nearly one million pigs, one gets a general percentage of 0·85, but some of the percentages given, especially in France, are suspiciously low. By adding to these figures some German and some unusually high Danish returns, quoted in the Report of the Royal Commission on the effect of food derived from tuberculous animals, a higher percentage is obtained, viz., 2·75, based on the examination of nearly one and a half million pigs. From this it would appear that one pig out of every 36 pigs is tuberculous. If it is remembered that in certain countries much pork is eaten salted or smoked, but uncooked, the importance of tuberculosis in swine will become apparent, for neither smoking or salting can be relied on for the destruction of the tubercle baccillus. In the pig the infection generally takes place through the alimentary canal. Young pigs fed on tuberculous milk or other tuberculous products are extremely readily affected, as proved by several experimenters since Chauveau in 1868, a result entirely confirmed by Dr. Woodhead and Dr. Sidney Martin. Hence the danger of throwing to the pigs uncooked tuberculous milk or offal as is not unusually done. Nocard believes that 9 out of 10 cases become infected through the alimentary canal. This is supported by the distribution of the tubercular lesions which affect chiefly the whole of the lymphatic ganglia connected with the alimentary canal from mouth to large intestine. The liver and spleen are generally affected, but the serous membranes are much less affected than in cattle. The lungs are often riddled with miliary tuberculosis, a result of general infection. Calcification of tubercle is much less frequent in swine than in cattle. Chronic affection of the glands of the neck and of the bones give rise to what has been described under the name of pig's scrofula.

In the Horse numerous instances of tuberculosis have been put on record, yet the animal used to be thought to possess a special immunity against tuberculosis. There is no sound basis for any estimation of the percentage of horses affected. From the way in which the thoracic and the abdomina organs are affected it seems certain that infection may take place either through the air or the food passages. But the baccillus must generally enter the body through the alimentary canal. What is specially remarkable about tuberculosis lesions if in the horse is the extraordinary proliferation of lymphoid tissue which is associated with them. The appearance of the spleen is also characteristic, and before the true nature of those lesions was recognised they were supposed to be lymphadenomatous. In some of these lesions the number of tubercle bacilli is at times extremely large. It is interesting to note that in the disease called lymphadenoma, lesions resembling closely those produced by tuberculosis in the horse are observed, but here tubercle bacilli cannot be demonstrated in ordinary cases by the usual methods. There is ground to believe that tuberculosis is more frequent in the horse than it used to be, and this is probably connected with the custom which has become prevalent in some districts of bringing up foals on cows' milk.

In the Sheep tuberculosis is undoubtedly rare. Taking the Danish and German statistics as guides, it would appear that not more than 11 sheep in 10,000 can be expected to be tuberculous under ordinary circumstances; in fact, this figure is too high, owing to the probable errors caused by various pseudo-tuberculoses. The proportion attacked is usually much smaller than the one just given, probably seldom above three in 10,000, and often much less.

The Goat, the supposed special refractoriness of which is taken as the basis for a method of serum-therapie for tuberculosis, has now been found not to be immune. Not only can it be infected experimentally, but several instances of non-experimental tuberculosis have been described by several observers;

one case examined by McFadyean has been on record for several years now. In several instances the tuberculosis has been acquired by cohabitation with tuberculous cows or feeding on cows' milk.

Instances of tuberculosis in the Dog and Cat are becoming more and more frequent in our pathological records. These animals undoubtedly often become infected owing to their living in the houses of tuberculous human patrons, but in town they may become dangerous to those who make pets of them, and specially to children.

Regarding tuberculosis in Birds, the speaker brought forward the importance of not being too much impressed by the difference between avian and human tuberculosis. We had to deal here only with varieties of the same bacillus, and as we know little of the conditions under which the tubercle bacillus lives saprophytically, it is impossible to tell at present whether the avian tubercle bacillus may not at times become a source of danger to man. The facts that in some poultry yards tuberculosis spreads rapidly and that when the disease has occurred once it is difficult to eradicate, show that avian tuberculosis is a very contagious disease. In conclusion, the speaker pointed out that domesticated animals constituted a breeding ground for a bacillus which was one of the most dangerous enemies of human life.

Recent observations showed that there was a tendency towards an increased prevalence of tuberculosis amongst these animals. Meanwhile, it is evident that considerations of mere economy cannot much longer prevent the State from dealing actively with such a glaring danger. It was fortunate, under those circumstances, that veterinary surgeons should have been called upon to assist medical officers of health in the inspection of animals used for food. The special knowledge which a veterinary man could bring to bear on such questions should make it possible for us to arrive before long at a correct estimate of the magnitude of the danger to which we are exposed through tuberculosis. This should be known, not only in a general way, but accurately in each district, and to the veterinary profession we are bound to look for the information still wanted.

The PRESIDENT said with regard to tuberculosis in horses, he supposed it was not very long ago that veterinary surgeons thought that horses were not subject to it at all, but hearing Dr. Delépine's remarks, it was probable that foals feeding on milk from cows became contaminated in that way. He said he knew a district (the Fylde district) fifty miles from Manchester where cows were regularly used for that purpose. With regard to the cat and the dog, it seemed to him that the former was more subject to tuberculosis than the latter. He had seen the disease for years in hens. He was sure the subject would open out a discussion very valuable, and concluded by asking some of the members to say something about it.

Mr. EDWARDS remarked that he had listened with great pleasure to Dr. Delépine's interesting paper but was rather astonished to hear from the essayist and the president respecting feeding foals on cows' milk. If a mare died the foal was fed on milk—cows were kept purposely to feed foals with the milk.

Mr. FAULKNER: Permit me to congratulate the members of this association, myself amongst them, on the great favour conferred upon us this evening by Dr. Delépine giving such a very interesting and instructive address. One or two points struck me forcibly. It is quite evident we now know far more as to the extent of the ravages of this disease (tuberculosis), also that it is very much on the march or has hitherto frequently gone undetected, and without a doubt, as was expressed in such a nice manner by Dr. Delépine, it is only by the combined working of the two professions that we can hope to gain the necessary further information thereon. With regard to the dissemination of the disease in different animals, I have during the last few years been rather

at a loss to account for the number of cases occurring in equines, whether it is the fact that the disease is on the increase or in the past been unrecognised, for I well remember many years ago, when travelling with a number of my professional *confrères* to a meeting of the Yorkshire Veterinary Medical Association, a discussion as to whether tuberculosis affected the horse and the general opinion was, it did not. Some five years ago I described about half a dozen cases in the *Journal of Comparative Pathology* and since then have seen an average of three to four yearly and no later than last week had one. Dr. Delépine's researches as to the mode of infection are of great interest and likely to prove of practical benefit, for in my opinion the feeding of foals on cows' milk may be largely responsible to its use as is not at all uncommon for the bringing up of equines. With regard to its slow development, as mentioned by Mr. Edwards, he having only met with it in aged animals, this may perhaps be accounted for to some extent by the system now in vogue of nursing sick horses on milk. I have had cases sustained solely on it for a period of three weeks when suffering from exhausting and debilitating diseases and recover, but latterly the milk is given after being boiled. Most of the cases of equine tuberculosis as seen by me have also been in aged animals. It is most instructive, as mentioned by Mr. Wolstenholme, to visit the abattoirs, and I think we have done some good this evening by introducing to our association as a member, Mr. King, the Veterinary Inspector to the City of Manchester, for I have no doubt he will be a help to this association. Our profession and Dr. Delépine work, in preserving morbid specimens and the keeping of statistics: and by way of doing something myself, I intend from this time forward to keep statistics. One feature observable in tubercular disease is that you may see an animal of a certain age and sex the subject of generalised tuberculosis and yet to all external appearance the picture of health. I once saw at our abattoirs a two-year-old Scotch bullock the carcase of which was prime and beautiful to look at and handle, but a worse case of generalised tuberculosis I never saw. As one means of checking the spread of this disease I took to the use of tuberculin, and am happy to find it is being now used by a friend of mine amongst pedigree stock just as mallein has proved to be of the greatest service, and almost a Godsend to practitioners who have to deal with glanders and farcy. Just one point "alluded to by Dr. Delépine as to milch cows and the statistics of the disease where they are kept in over-crowded situations, and under general bad sanitary conditions, such as applies to large towns, viz., the large percentage affected," and it is the very great drain on the animals by forcing with brewers' grains and heavy milking rendering them more susceptible subjects. I feel very much indebted to Dr. Delépine for his kindness in coming here this evening and favouring us with such an admirable and instructive address.

Mr. R. HUGHES thanked Dr. Delépine very much for the practical way in which he had introduced his subject. He had no doubt tuberculosis had often been confused with lymphadinoma. Feeding foals on cows' milk was very common in breeding districts. In his district they had two important associations hiring very good shire horses every year. For show purposes it was a common practice to give cows' milk to foals as soon as they were able to do with it. He quoted an instance of a cob at the Shropshire and West Midland Show which took the first prize. After the show the allowance of milk was discontinued, and the cob began to lose flesh and soon afterwards died. Upon *post-mortem* he thought it had died from lymphadinoma but now he had no doubt it was from tuberculosis, in consequence of becoming infected through the cow's milk. In conclusion, he was very much obliged to Dr. Delépine for bringing this important paper before the society.

Mr. LAITHWOOD: I cannot resist giving my testimony to the very excellent

paper given to us this evening by Dr. Delépine. I have been for some time considerably interested in this disease (tuberculosis), and, living as I do in a very great dairying neighbourhood, we have a considerable quantity of it amongst us, and I am sure I agree very considerably with everything Dr. Delépine has this evening told us with regard to it. I am certain that it is the most important of all the diseases we have to contend with, and is undoubtedly, in my mind, causing more harm than anything else that we have to do with. I think the danger attending it with regard to the consumption of flesh, and also from the use of tuberculosed milk, is untold. No one can tell the amount of mischief daily through the consumption of the flesh, which, in my belief, is unfit for human food, and I am very strongly of opinion that not one ounce of tuberculosed flesh, either from animals, birds, or from any source, should ever be used for human food, and not only that, the milk from tuberculosed animals ought not to be used for human consumption. I see the public have been pressing to be protected against this enemy, and they ought not even to be allowed to buy, or have the chance of buying tuberculosed meat or consumptive milk, and I think from this association, or from some other, or some reliable body of men, some resolution should be put forward, and in my opinion this disease ought to be scheduled under the Contagious Diseases Act. I think some suggestion with regard to the injection of tuberculin, which is, I firmly believe, one of the grandest tests that we have with regard to the disease, that the disease may in some future time be almost exterminated from the country. With regard to tuberculin, I have myself made some experiments with it, and I can speak most highly of it from the experiments I performed. By different operations during the last twelve months I have ascertained that from 120 animals that showed a rise of temperature, on slaughter 115 were found to be tuberculosed, and I think this is a sufficient percentage to guarantee the use of tuberculin in all suspicious cases; and not only for suspicious cases, but I think every animal ought to be tested, and thus rid the country of the disease. I am sure I heartily thank Dr. Delépine for the admirable paper that he has given to us, and trust that some practical results may come of it.

Mr. WILLIAM WOODS: With regard to the animals affected, I think the experience of every veterinary surgeon will agree with Dr. Delépine not only of course that the cow is the most affected (that will be agreed upon), but that pigs are affected to a very considerable extent with tuberculosis, and one breed in particular (the Tamworth) of pigs; the amount of tuberculosis in that breed is very considerable indeed, in my experience. With regard to the mode of infection, too, of pigs, I had a little time ago a very good example of infection through the ingestion of tuberculous matter. A butcher in the town in which I live had about 10 or 12 pigs, all of different ages, and these pigs were turned out on to his manure heap. I may say he was a low class butcher who dealt considerably in low class meat, and every one of these pigs became affected with tuberculosis, although the ages and breeds of the pigs were different, proving to my mind that they had contracted the disease in the yard of that butcher, because it would not be very well supposed that all those pigs, which were of different breed and different ages, should each of them be the subject of tuberculosis when the man bought them. The horse I have certainly found to be tuberculosed, as all veterinary surgeons have, on several occasions, but not a great number. I have found in these cases that the skin perhaps, the spleen, and the vertebræ seem to be affected. In almost every case of tuberculosis in the horse, the animal has wasted and disease of the spleen has been suspected, the neck has gone quite stiff, and *post-mortem* has shown considerable disease of the neck of the animal. I have also seen two well-marked cases in which there can be little doubt but that the human being can become affected from the lower

animals. I was asked to call and see a cow that was reported suffering from pleuro-pneumonia, but when I got there it was in the last stage of tuberculosis with considerable tuberculosis of the udder. Some twelve months after the owner of the cow came to me and asked me what was the matter with the cow. I told him it was consumptive. He said, "Do you think it is catching? My lad is dying of consumption, or dead of consumption." This lad had been particularly fond of milk, so much so that this cow had been bought for him, and he had drunk milk from this tuberculosed cow—from three to four quarts a day—and within twelve months of the death of the cow, his lad was dead also from what the doctor called acute consumption; so I think that there it showed tuberculosis from the lower animal to the human being. The prevalence of tuberculosis in town byres cannot be overstated. Whenever I go into a town byre round us, and am called to a case of a cow with any lung affection, my prognosis is always exceedingly guarded that she will get better if not tuberculised. That is about my feeling in many cases when I am called to them. I think the fact, and I suppose it is accepted as a fact, that tuberculosis is purely a contagious disease, and that it is not hereditary, except in so far as certain constitutions may form a suitable soil for the growth of the bacillus—that fact seems to me to point to tuberculosis going under the head of preventible diseases, and that being so, I think that the leaders of pathology in this country ought to unite and ought to impress upon the Government that tuberculosis is a preventible disease, and I know that veterinary surgeons have been crying out and endeavouring to persuade the Government to schedule tuberculosis under the Contagious Diseases Act to stamp it out; but the veterinary profession has been a weak and unimportant profession, and it has been "the voice of one crying in the wilderness." Some four years ago, when as the President of this Association, I arranged a joint meeting of veterinary surgeons and medical men, because I felt that we, as veterinary surgeons, along with medical men, had laying upon us a very great responsibility when we are aware that thousands of people are dying from a preventable disease, and that in all probability, that preventable disease was being produced by the animals which were committed to our care. I say that although we have tried to do that, our efforts have not been successful; but I think those efforts, if they were backed up by the medical profession and the leaders of pathology, who would point out that, while a man was hung for murder, the Government is permitting, by its want of legislation, thousands of people to die when, probably, they might, merely as a matter of £ s. d., save thousands of lives; and that there are sins of omission as well as commission, and that, perhaps, if it could be brought home to the Government the great responsibility which rests upon them in not legislating to endeavour to reduce this disease, we should have spent, many of us, our lives in very useful efforts. I thank Dr. Delépine for one of the most practical papers, which, I think, gives more food for thought, and which certainly proves that the experiments of the scientific pathologist exactly agree, I think, with the experience of the every day practitioner. That was the feeling I had when I heard Dr. Delépine's remarks.

Mr. WOLSTENHOLME: It will be well within your memory, gentlemen, that a few years ago on the appointment of a Medical Officer of Health, this Society called a meeting and arranged for a presentation to be made to the Manchester City Council on the subject by having a Veterinary Officer attached to the Health Department. It was a revelation to us that so little importance seemed to be attached by the members of the City Council to the value of a veterinary surgeon in connection with the health of a community. In course of time Manchester has at last appointed a veterinary surgeon to serve it in connection with its meat supply. A revelation it has been to me to go round the abattoir with the Veterinary Officer and see the amount and

variety of tuberculosis there to be found. He said himself it was a revelation to him to find the great prevalence in the Manchester market of tuberculous udders—he showed me two such udders at the time, also two tuberculous kidneys. The relationship of this association with the medical profession in this district has now been for some years a bright one and I think is bearing good fruit to both professions. The way in which we are received by the medical profession, in the open door to their Pathological Society, and the way in which post graduate medical study may be taken up by the veterinary surgeon is very pleasing and is producing good. I do not know whether any of you have read a paper of Dr. Delépine's which was published in the *Veterinary Record* which carries the subject of tuberculosis further. As with the lay members of the community, so I think there has been a considerable want of appreciation in the medical profession with respect to the distribution of tuberculosis. It is only this year that an article in the *British Medical Journal* by an American doctor quoting some new cure for tuberculosis through blood serum of the horse, it was stated that the horse "was immune to tuberculosis." I am surprised that a medical man of authority could make such a mistake after all the public records to the contrary, and am surprised that it should find its way to the *British Medical Journal* uncorrected. That, I think, points out something of the want of appreciation and want of knowledge on the part of an ordinary surgeon in connection therewith. The paper which I referred to by Dr. Delépine carries the subject further, for recently there has been a very divided opinion between medical men as to whether the flesh of tuberculous animals was likely to convey infection to the human subject. Experiments which have been made in this direction have been so performed with the flesh, and the flesh only, of such animals, it would seem that if you carefully give an animal simply muscular tissue without lymphatic glands, you are not likely to produce tuberculosis by ingestion; but if you give flesh and lymphatic glands from tuberculous animals, you quickly produce tuberculosis. All meat sold by the butcher for human consumption is sold flesh, and fat, and lymphatic glands. I have very little doubt that tuberculosis is also widely disseminated by the diseased udders which are supplying milk for the consumption of children. I think that, even in this district, there is an advance in the knowledge of tuberculosis, and a distinct appreciation of the value in which a veterinary surgeon may help the medical officer of health. It is a matter of pleasure for me to know that a veterinary surgeon, Professor Nocard has been named to us as an authority on tuberculosis. Like other men, I have thought something over the question of the heredity of tuberculosis. I have simply been overwhelmed by the statistics which appear against the probability of such. Another point which is very interesting is the use now made In determining a diagnosed or suspected tubercle by inserting a little portion of diseased tissue under the skin of a guinea-pig. In conclusion, I wish simply to re-echo Mr. Woods' opinion that Dr. Delépine's paper is one of the most practical of practical papers that we veterinary surgeons could have, and to add my expression of thanks and gratitude to the doctor for having given it to us.

Dr. DELÉPINE, in responding, said he had been rather surprised to hear the members speak so favourably of his paper, as he had expected nothing but criticisms upon it. He was not prepared to hear that hens in this country were afflicted with tuberculosis to such an extent, and this was information which was new to him. He said Mr. Wolstenholme had undoubtedly touched upon a very large number of important points, and as Mr. Wolstenholme agreed with him in a great many of them it gave him considerable satisfaction. Regarding Mr. Faulkner's remarks that old horses were frequently fed on milk when ill, he was not acquainted with this fact. He had obtained information from the members which would make a great many difficult points easy. The

drain on milch cows must have considerable influence with regard to tuberculosis. As to cows being sent to town after they had already contracted the germs he thought this was a very ingenious idea but he did not think it would account for the fact that cows become infected in certain byres and not in others, and that in certain byres the cows which are in close contact with tuberculosed cows became more rapidly infected than those which are not in immediate contact. The older a cow is the more likely it is to be infected. In Paris cows are now kept for about a year only, and since that arrangement the cows sent to the slaughter-houses have very seldom been found to be tuberculosed. It was gratifying to him to have the entire support of Mr. Laithwood, who, on account of his position, was undoubtedly able to speak on this very important matter. There was no doubt that what was wanted was the scheduling of the disease under the Contagious Diseases Act. This was a requirement which had been demanded for a long time by the veterinary profession, and also by a great number of the medical profession. He thought it was more the fear of incurring considerable expense to the State that the Government did not comply with the demand of the professions. He quite agreed with all Mr. Laithwood's remarks as to the efficacy of tuberculin. Nocard, in France, and Layton, in Germany, have insisted on the same fact that tuberculin is an extremely important agent in diagnosing tuberculosis. What Mr. Woods said about the especial liability of the Tamworth breed of pigs to tuberculosis was entirely with what Nocard had said—that precocious kinds are very much more liable than other kinds. About the infection of the vertebræ—that is, the presence of tuberculosis in the bones and the spleen, confirmed what had been seen in the case of the pig, because when infection takes place from the alimentary canal the throat, the tonsils, and the mucous membrane became infected. The bones of the vertebræ are extremely liable to become infected. It is extremely remarkable that Mr. Woods should have noticed it from practical observation. As to the action of the Government it must be remembered that the advisers of the Government were not free agents. They were allowed to speak but the Government acted and did what it liked, and when a report was inconvenient it was simply shelved. He thought the influence of the medical profession in the matter was not very much greater than that of the veterinary profession. Slight differences which existed in the veterinary profession also existed in the medical profession. As to the question about measures to be taken the members knew that in Germany as well as in this country there were advocates of mild measures and strong measures. He thought the time had come when associations such as the L.V.M.A. ought not to be satisfied with meetings and discussing various questions, but by collective investigation it would be possible to do very great things provided the work was very well divided. Those with a large practice could collect important statistics which it would be quite impossible for those with a small practice to collect.

Mr. FAULKNER said he had much pleasure in proposing that the best thanks of the association should be given to Dr. Delépine for his kindness in coming before them this evening, and he hoped there would be some practical outcome of the work that the essayist had taken upon himself to do.

Mr. WOLSTENHOLME seconded that proposition.

BERKELEY CASTLE AND ITS STOCK.

THE Smithfield Show, great and attractive as it was, had been pretty well exhausted in its interest for us after we had spent two days of close attention and hard work upon it. The great gathering at the sale of the Queen's fat stock at Windsor, where so many Scotsmen turned up, partly to see the

Royal farms, partly to see the sale, and partly in honour of the able and skilful Scotsman who has so long acted as the Queen's Commissioner, had claimed our attention on the Wednesday. Lord Winchilsea's projected demonstration on the Thursday of the progress he was making with his Tower of Babel, in the way of binding together by the bond of self-interest, three classes whose interests in many respects are diametrically opposed to each other, was not of sufficient interest to keep anyone for the space of another day in London—that great throbbing heart of the business life of the British Empire. Our work in the metropolis, therefore, was finished for the time being, and with a light heart we shook the mud of London off our feet, and set out for pleasant fields and pastures new. Our destination was Berkeley Castle, in Gloucestershire, our object in going there being, partly to inspect the herd in which the 4,500-guinea bull, Duke of Connaught, served for so many years, partly to examine into a report we had heard as to chronic abortion having been stamped out in that herd by a novel and very simple process, and, partly, also to enjoy a pleasant visit to Mr. Peter, who has for many a long year been land agent on that estate. From Paddington to Gloucester is a longish run; but the scenery is so varied and interesting, that no one who travels along that line for the first time will have any cause to complain of the tedium of the journey. For the first part of the journey we had as our travelling companion Mr. Leonard Pilkington, of Cavens, who was naturally very much elated over the success of his champion Galloway steer at Smithfield, which steer, by the way, was generally acknowledged to be the best representative of the breed ever exhibited at Smithfield. Besides owning a large stock of high-bred prize-winning Clydesdales, Ayrshires, and Galloways, Mr. Pilkington is going in strongly for the breeding of thoroughbreds, and his object in going to Reading that day was to inspect the progress made by his young thoroughbreds which are located in that quarter. As we journey on by Windsor and Reading, we can easily understand how it was that so much of that part of the country was for several days completely under water during the heavy flooding of last month, for a large part of the land on either side of the Thames lies very low and flat, and although the weather had been dry for at least a week, the river still reached perilously near the top of its banks. On arriving at the quaint and very attractive cathedral town of Gloucester, we change into a slow train, and a short run of some fifteen miles brings us to Berkeley Road, where Mr. Peter has a hearty welcome for us. As we drive along the road to Berkeley Castle, some three miles distant, we had ample opportunity of taking stock of Gloucestershire farming, and discussing with our host the distinctive features of Gloucestershire agriculture as compared with Scotch farming.

Gloucestershire Farming.

In the vicinity of Gloucester the farms are, for the most part, of moderate extent, from 150 to 250 acres being the average size, but a good many holdings are considerably smaller. The land is, comparatively speaking, all under grass, and some of the pasture lands are very rich and productive. A Scotsman, visiting that part for the first time, might be tempted to think it would be a capital stroke of policy to plough up some of these rich old pastures, and take a course of heavy crops off the land before laying it down to grass again. Such a course, however, would not be repeated by any one a second time, for, on account of the stiff, tenacious character of the land, the cost of cultivation would be far greater than the value of the crops at present prices. Besides, the laying down of land to permanent pasture is a very costly process in the south of England; and not only is the initial cost of working, manuring, and seeding the land very heavy, but many years of good management and liberal feeding through the consumption on it of cakes, are required before a good sole

of pasture is secured. The old adage that "to make a pasture would break a man, and to break a pasture would make a man," now holds good only as regards its first clause, for, although the making of a pasture in the south is still so costly that it would comparatively "break a man," yet, on account of the cost of cultivation and the low price of grain crops, the breaking of a pasture would now be an unprofitable speculation. In fact, however unwilling anyone may be to see the plough thrown aside and the number of farm labourers reduced, still the conclusion is inevitable that the old pasture lands in that quarter are much more valuable and much more profitable than arable land. As a matter of course, straw is very scarce in these parts, and the cows or other bovine stock kept in the house during winter are fed on meadow hay, with an allowance of cake or other concentrated feeding stuff. Dried brackens, sawdust, and peat moss are the substances chiefly used for litter. In Gloucestershire, as in so many other parts of England, the fields are very small, and are divided from each other by high thorn hedges. A Scotch farmer, visiting that county for the first time, might suppose it was a great waste of land to have so much of it taken up with hedges; but that is another mistake, for, on account of the shelter afforded by these high hedges, the grass grows pretty nearly all the year round in these small, well-sheltered fields, and the younger cattle can find a fair bite in them all through the winter. In the small part of tenacious clay, which is still under cultivation, the plough is drawn by three horses going tandem in the furrow, a system which necessitates the service of a driver as well as a ploughman. At the first blush, a Scotsman might think that a couple of good Clydesdales, worked abreast, would easily draw the plough, so that the services of the third horse and also of the driver might be thus dispensed with. But this would be another mistake, for the land down there is so stiff and sticky that two horses could never turn a furrow in it, and if three horses were worked abreast on it the land would be so completely turned into mortar that nothing would grow upon it for years to come. The system of ploughing with three horses going tandem in the furrow is, therefore, the only one adapted to that sort of land; and, as Mr. Peter said to us, the system followed by the best farmers in any district is almost invariably the system best adapted for that district. Mostly every farm has an orchard planted with apple trees, among which the cattle, sheep, or pigs are grazed, and the orchard is generally one of the most profitable departments of the farm, the making of cider being a very important industry in that quarter. Dairying is very largely carried on in Gloucestershire, part of the milk being sold sweet in the towns and villages, while a large part of it is manufactured into single Gloucester cheese, a few "Double Glo'sters" being also made. The extreme competition for farms, of which we have lately heard so much on this side of the Border, also prevails in Gloucestershire, and for every vacant farm there is always a plethora of competitors. Most of the farms are held on year to year leases, and the average range of rents is from £1 to £2 per acre.

Berkeley Castle and Home Farm.

Before we had finished discussing the differences between farming in Gloucestershire and Scottish agriculture we had arrived at Berkeley Castle. This grand old pile, so rich in historic associations, is of itself well worth going a long way to see. Here the visitor sees the bedroom and bed in which the hapless King Edward II. was sleeping when he was seized and done to death by the ruthless conspirators. The breach in the old keep wall caused by Oliver Cromwell when attacking the castle is also preserved, as far as possible, in the same state as it was when the great Protector left it. The home farm is only a short distance from the castle. The buildings on this farm are commodious enough, and large covered hay-sheds form an importan part of its equipment. A capitally equipped dairy also forms an important part of the steading. A large part of the milk handled in the dairy is ru

through an Alexander Separator, the butter being made up for use in the castle, while the separated milk is used for the feeding of pigs. During the summer months a part of the whole milk is used for the manufacture of Stilton cheese; and, as the Stiltons from Lord Fitzhardinge's dairy have a great reputation in the market, the demand for them is always greater than the supply. As good Stiltons readily command a price of 1s. per lb., the making of Stilton cheese is, of course, one of the most profitable uses to which the milk can be put. In addition to the home dairy, Lord Fitzhardinge has also erected a dairy factory mainly for the use of his tenants. This dairy factory, which is now in the hands of a limited liability company, has proved a great convenience to the tenantry, and pays its shareholders a good dividend; but curiously enough, none of the farmers whose milk is received at the factory seem to care for being shareholders in the company. A considerable part of the land on the home farm might be called haugh-land, as it lies very low and flat on either side of a deep stream which flows into the majestic Severn a few miles further west. As was the case in the neighbourhood of Windsor, this haugh-land formed what General Booth would call a "Submerged Tenth" in the time of the heavy floods a few weeks ago. Last year, however, when the South of England was at the very antipodes of the state of flooding recently experienced, Mr. Peter was able to turn this stream to very good account, for, in the time of the unparalleled drought which shrivelled up the crops in the southern counties, he converted the stream into a canal for irrigating the meadows on both sides, with the result that between the irrigation and the blazing sunshine he raised a magnificent crop of hay, while most of the other farmers in that quarter could have cut their hay with a lawn mower. Mr. Peter, by the way, is a Forfarshire man by birth, as he was born at Tillygloom, near Brechin, a farm which has been held by his family for generations, and is now held by his brother, Mr. Hendry Peter. In early life Mr. Peter was under his brother, Mr. John Peter, who was farm manager for Lord Southesk at Kinnaird Castle, and it was while he was acting in that capacity that the famous Erica, the foundress of the noted polled Angus family of that name, was dropped in the herd then under his brother's charge. For the last twenty-two years he has acted as commissioner for Lord Fitzhardinge, and the way in which he has discharged the duties of that office is a proof or his skill, tact, and good management.

Clydesdales and Highlanders.

The farm stock kept at Berkeley Castle is a varied one, consisting of a shorthorn herd, a Clydesdale stud, and a fold of Highland cattle. A herd of choicely-bred Berkshire pigs was also kept up till recently on the home farm, but, to the great regret of both Lord Fitzhardinge and Mr. Peter, the herd had to be slaughtered out on account of an outbreak of swine fever in the district. In the afternoon of the day on which we arrived there we had a good look through the Clydesdales. Mr. Peter is convinced that for ordinary farm work the Clydesdale is much more suitable than the heavier and slower-moving Shire, and as Lord Fitzhardinge shares the same belief, the Berkeley Castle stud horse is placed at the service of his Lordship's tenantry on very easy terms. The Berkeley Castle stud has for the last four years been headed by Prince of Berkeley, a massive, strong, well-built animal, bred by Sir Robert Loder, and got by Stonehenge out of Nancy of Whittlebury, whose granddam Nannie, was by the renowned Lockfergus Champion. Prince of Berkeley, now a six-year-old, is wearing well, and he has been breeding well, many of the young animals by him being of much promise. His young stock, however, are now coming to be so numerous, not only in the Berkeley Castle stud, but also on the estate, that another sire to take his place will have to be purchased before spring. Among the mares we noticed particularly the six-year-old Lilly of Berkeley, a stylish, big-sized bay mare, also bred by Sir Robert

Loder, and got by Stonehenge out of the Drumflower Farmer mare Lilly of Whittlebury, whose granddam was the Lochfergus champion mare Nannie. Lilly is the dam of a beautiful yearling filly—Lally—sired by Prince of Berkeley, and this filly is so promising that she will be brought out at next year's "Royal." Bell of Berkeley, a two-year-old, got by Prince of Berkeley out of the Lord Kelso mare Nell, is an animal of great substance and nice quality. In fact, the young animals in the stud are all of great substance, and this fact seems to give force to the contention of those who hold that the greater substance of the Shire is only an illustration of the law of environment, as the Shires are for the most part raised on stronger and heavier soil than the Clydesdales. The operation of this same law is also to be seen in the Highland herd at Berkeley Castle, for the Highlanders bred on the rich lands at Berkeley Castle lack much of the rugged grandeur which is characteristic of the Highlanders raised in the Highlands of Scotland. The Berkeley Castle Highland fold was mostly formed originally by purchases made from the Duke of Sutherland's herd at Shinness. Up till recently the bull which was at the head of the fold was Clebrig, the Shinness-bred bull which won the third prize at the "Royal" at Windsor, and most of the younger animals in the fold are got by him. Clebrig, however, has now gone to the block, and his place at the head of the fold has been taken by Athelstan, 977, a massive, straight-topped, level, brindled bull, bred by Lord Southesk, and got by Iain Challum, 667, out of Te Riabhach, 35, which won first prize at the "Highland" at Perth in 1887. He is, therefore, a very highly-bred bull, and individually he is well worthy of his place at the head of the Berkeley Castle fold.

The Plague of Abortion.

On the following day we had the pleasure of inspecting the Berkeley Castle shorthorn herd in the company of the noble owner and a party of his friends, including the Duke of Wellington, Lord Westmoreland, Lord Enniskillin, and Captain Thoronton. But, before making any remarks on the principal members of the herd, it is important to note some remarkable facts as to its past history. Twenty years ago the Berkeley Castle shorthorn herd was one of the leading shorthorn herds in England, and a large proportion of the most prominent prize-winners of the day were drawn from its ranks. As already noted, the famous bull Duke of Connaught was bought at the Dunmore Sale in 1874 for this herd at the record-breaking price of 4,500 gs. The purchase of this animal at this fabulous price proved to be one of the most profitable purchases ever made for any herd, as during the years he stood at the head of the Berkeley Castle herd he earned far more than his purchase price in service fees for cows sent from the best herds in England to be mated with him. He also begot in the Berkeley Castle herd a host of valuable animals, some of which were retained in the herd, while many others were sold at prices ranging from 100 to 1,000 gs. each. One of the young Dukes thus sold was Berkeley Duke of Oxford, which was sold to Mr. M'Culloch for exportation at the price of 700 gs. Another of the same family, namely, Berkeley Duke of Oxford 2nd, was bought for 1,000 gs. by Mr. Hume, of Barrelwell, Brechin, for Mr. Hill, of Minnesota. Mr. Angus, of Australia, also bought from Lord Fitzhardinge a dozen head of Duke of Connaught's descendants at prices ranging from 100 to 300 gs. each. But in the beginning of the "Eighties," this great herd which for the previous six years had been in the zenith of its fame, suddenly dropped almost completely out of sight. The Plague of Abortion had seized upon it with such virulence that scarcely a cow in the herd escaped, and many of the best cows had to be parted with on account of their repeated "slips." For ten years this state of matters continued; and, although the most eminent veterinary Professors in England were called in to advise on the subject, yet all the remedies that veterinary skill

could prescribe proved to be powerless to abate the plague. Even the Highland cattle on the place became affected with the plague, and it seemed as if the whole of the cattle stocks at Berkeley Castle would have to be cleared out by the way of stamping out the disease. At last, however, a method was suggested by which the plague was effectually stamped out. Mr. Andrew Montgomery, of Netherhall, had sold to Lord Fitzhardinge a lot of Clydesdale mares, and some time after he had gone to Berkeley Castle to see how the mares had suited. On learning how the Berkeley Castle herd was being decimated by the Plague of Abortion, Mr. Montgomery advised Mr. Peter to try a method which, to his certain knowledge, had been followed with unqualified success by Mr. A. B. Matthews, a well-known breeder in the New World. Arguing from the fact that carbolic acid acted effectively as a germicide when applied externally, Mr. Matthews determined to try whether it would not be equally effective as a germicide when applied internally. For that purpose he began to give his pregnant cows small doses of this substance, the doses being steadily increased until they reached half an ounce per day; and as soon as this treatment was adopted in his herd, the plague at once ceased. Mr. Peter decided to give this treatment a thorough trial, the carbolic acid being given to the cows in bran mashes; and in his case also, as soon as this treatment was adopted, the plague was stayed. The carbolic was given in small doses at first, and gradually the quantity was raised, till the dose reached the maximum of a half ounce per head, which was given every alternate day. Although the plague which had ravaged the herd for ten years ceased from the very day that this treatment was commenced, Mr. Peter still gives the pregnant cows a half-ounce dose of carbolic in a bran mash once a week as a preventive against the plague. When the Royal Society of England were recently conducting their inquiry into the subject of abortion in cows, Mr. Peter gave evidence before them as to his experience in dealing with the plague; and the veterinary experts on that Commission were so astounded at the very idea of giving a half-ounce dose of carbolic acid to a cow that they decided to take no notice in their report as to the remarkable evidence laid before them as to the use of this substance in stamping out the plague. It may, of course, be said that the plague may have been to die out of itself at the time this treatment was applied; but any one advancing such a contention must admit that it was certainly a most remarkable fact that, in the herds both of Mr. Matthews and Lord Fitzhardinge, the plague which had raged so virulently for years was stayed from the very day that this treatment was adopted.

The Berkeley Castle Shorthorns.

The herd at the present time is essentially of Bates blood on the female side, with Cruickshank blood on the side of the sires. A large proportion of the cows are direct descendants of Duke of Connaught; and the principal strains represented are the Waterloos, Winsome Countesses, Dowagers, and Blanche Roses. The Sittyton-bred bull Leonidas did splendid service in the herd, and was the sire of many rare good animals, including the yearling steer which won first prize at the recent Birmingham Show. The herd presently includes a grand lot of yearling heifers got by him, and these are all thick built, broad backed, richly fleshed animals of the best shorthorn type. The principal stock bull, Dolphin, now a two-year-old, was also got by Leonidas, his dam being Dowager 11th, a cow which is closely in-bred to Duke of Connaught. Dolphin is a massive, good, red bull, grandly fleshed along the back, strong in his quarters and thighs, and well ribbed up to the shoulder. Lord Fitzhardinge has also, within the last few weeks, purchased from Mr. Deane-Willis, of Bapton Manor, a rare good bull calf, got by Mountain Lord, 64,466, out of the Commodore cow Victoria 83rd, whose granddam was by the renowned Champion of England. This young bull—Mountain Victor by

name—is a straight topped, broad backed, and grandly ribbed animal ; and, as will be seen from his pedigree, he has in his veins some of the best and most coveted English and Sittyton blood. With such materials, and with the herd now happily cleared of the plague which ravaged it so long, there is good reason to believe that the Berkeley Castle herd will soon again take for itself among the shorthorn herds of England a place as prominent as that which it held when it was headed by the 4,500 guinea bull Duke of Connaught.

JOINT-DISEASE OF FOALS AND OTHER YOUNG ANIMALS.

In an article contributed to the *Journal of the Royal Agricultural Society of England*, by Professor John Penberthy, of the Royal Veterinary College, London, he first describes the different names by which the disease is known : "Joint Ill," "Navel Ill," "Foal Ill," "Scrofulous Joint Disease," "Specific Arthritis," "Rheumatic Arthritis and Pyæmia," and states that it is most commonly observed in foals, lambs and calves, and less frequently in young pigs and puppies. It occasionally occurs in isolated cases only, while at other times it affects a large number of young animals. It invariably appears soon after birth. It affects all breeds, pure and cross-bred, but is more frequently met with in the former. The cause of the disease has been attributed to in-and-in breeding ; scrofula or tuberculosis ; improper feeding or working of the mare during pregnancy, or the suckling period, cold, damp, and a variety of local unhealthy conditions. But the Professor states that it is beyond question that the disease is due to a germ which may enter the system of the young animal while in the womb, but most probably after birth. But whether contracted in the womb during the act of parturition or subsequent to birth there is ample reason for believing that the germ usually enters the young animal at the navel, and he explains the manner in which this may occur as follows :—"At birth the cord passing through the navel is made up, amongst other matters, of vessels which in the womb carry the nutritive blood from the mother to the fœtus, and the used-up impure blood from the fœtus to the mother. At birth this cord is severed, and the blood flow stopped by a clot which forms in the vessels. Soon after separation the end of the cord shrivels, and the aperture through which it passes heals up. The extremity of the cord in the navel dies and under favourable circumstances becomes absorbed. Conditions which favour the absorption of the dead part hasten the closing of the navel, so that, in the healthy new-born animal, there is a natural process to prevent the entrance of injurious matters through it. It is well known to physiologists and pathologists, that anything which retards the natural healing process favours the growth of microbes there, and affords a means for their entrance into the blood-vessels which distribute them through the system."

"It is important, therefore, in view of the evidence that the germ of this disease enters through this opening, to inquire into those circumstances which interfere with the natural disposition of the navel to heal. In all probability, anything which during pregnancy debilitates the system of the mother, may have this effect. Improper feeding, insufficiency of material essential to the nourishment of the fœtus, want of exercise, and especially anything which causes the birth of the young animal considerably before its time, must be regarded with suspicion."

Further, malignant parturient fever in ewes, and abortion in mares, should be looked upon with suspicion, as being related to the poison or germ which produces joint-ill, and the fact that the disease appears in a larger proportion of males than females, would indicate that the urine which is dribbled by the male, interferes with the healing of the navel. But all such matters, though important as predisposing causes, are not the originating cause of the disease,

that being due to a special microbe which usually settles at the navel before it is closed, and grows and multiplies in the clot in the broken end of the vessel. It is then carried away by the blood stream, and distributed to various parts of the system, amongst other places particularly selecting the joints. In the situation in which the microbe is arrested, it sets up inflammation, which results in the collection of quantities of matter of a peculiar character. In addition to this local effect, there is the production of a debilitating fever and other systemic effects.

The individuality of this microbe or its natural history, has not been worked out, but its effects have been carefully studied, and these make it clear from a practical point of view, that it is of the utmost importance to prevent the access of this germ into the navel vessels.

It is further evident that the affection is contagious, and may, therefore, be introduced into a herd or flock by an affected animal.

The symptoms are describes as follows:—"As implied by the majority of names given to the affection the more prominent symptoms are associated with the joints or the navel. Before swelling in these situations is appreciable it may however be noticed that a few days after birth the young animal has great difficulty in moving, is more or less lame, and manifests the indisposition to move by constantly lying down or standing in one position. Debility is evident, sucking is not carried out vigorously or continued, appetite is sometimes absent, and the little subject is tucked up, the coat becoming dry and harsh. There is often a slight discharge from the eyes and nostrils. The navel is generally swollen, open and discharging matter; and though sometimes it is healed on the outside, its neighbourhood is inflamed. In the course of a few days at some of the joints or other external parts there are noticed hot and painful swellings which assume a considerable size. Any joint may be affected, but it more frequently happens in the hock stifle, hip or knee. In lambs more rapidly than in calves or foals, it becomes evident that in these situations abscesses have formed which sometimes burst and discharge a peculiarly unhealthy looking material. The loss of flesh at this stage is very marked. From the commencement the breathing is hurried, and with the progress of the disease it becomes more and more disturbed, shorter, quicker, and sighing. This disturbance is often very marked and the subject is deemed to have taken a "chill." The pulse at first small and quick, becomes weaker and weaker, till it is scarcely perceptible. Occasionally in the early stages diarrhœa is a prominent feature; this however may not make its appearance until the disease is advanced, but sooner or later is observed in most cases The temperature is raised, proving the febrile nature of the affection."

As a rule the symptoms are manifested from 7 to 20 days after birth, and the disease runs through its course in from 7 days to 3 weeks. Sometimes, however, the patient dies within 3 days of its being noticed to be ill. In such cases the symptoms are acute, and death may occur before abscess formation at the joints. The course may be prolonged, and some subjects "hang fire" for months, though this is the exception. There will naturally be variation of the symptoms, dependent to a great extent on the parts involved in the local changes set up by the germs after entering the body.

On *post-mortem* examination there is generally discovered evidence of the disease having resulted from affection of the navel. Though usually open, this may be found healed up on the outside. On the inside, the vessels frequently contain very dark blood, and unhealthy, sometimes putrid matter, and about the end of the cord abscesses may have formed. In calves and lambs most commonly through the veins, and in foals through the arteries, the germs having heen distributed to various parts of the body, and becoming arrested in some, set up inflammation, and formation of matter there. In all very young animals, the joints would appear particularly favourable to these

processes, and in animals dead of this affection are found in and about the joint sacs collections of matter, and evidence of destruction of essential parts of the joints, the lining membrane which secretes the "Joint oils," the cartilage covering the ends of the bone and the bone itself. Sometimes the quantity of matter is very great and bursting through the structures enclosing the joints finds its way into the sheaths of the tendons, &c. Any part of the body may give evidence of a similar process; the lungs, the chest cavity, the liver, kidneys, the glands, the cavity of the abdomen, and the brain are common seats of abscesses.

Curative measures are not very hopeful after the poison has entered the system. Attention should first be given to the navel from which all unhealthy matter should be removed and the part thoroughly cleaned and dressed with a disinfectant, and if any secondary swellings or abscesses occur in non-essential parts of the body, these should be opened and cleaned and disinfected in a similar manner. It is in preventive measures, however, that most success is likely to be attained, and these consist first in being careful not to introduce an affected animal into a flock or herd; and in the prompt isolation of and the thorough destruction or disinfection of all beddings, &c.

Further, all the young animals that may have been in contact with an affected one should have their navels cleaned out and dressed with a disinfectant solution.

The next consideration is cleanliness. All boxes into which mares are placed to foal and remain with their foals, should be thoroughly cleaned and disinfected previously. He further recommends where the disease has appeared that all foals or calves when born should have their cord and navels washed with a disinfecting solution, after which the cord should be tied with a string which has been steeped in the same solution so as to prevent the absorption of the infective germs. And those who attend to the affected cases should not be allowed to come near the healthy. This disease is most prevalent in this colony amongst our more valuable herds and flocks which are housed and kept more or less under artificial conditions, but it occasionally occurs amongst flocks of sheep and goats that graze on the veld, but lamb or kid for the most part in kraals; under such circumstances, as the Professor recommends, the affected lambs or kids with their mothers should at once be removed from the flock, and the remainder of the ewes placed in a new or clean kraal. Too little attention is given to preventive measures, in dealing with the several infectious diseases which affect our flocks and herds in this colony.

D. HUTCHEON, *Colonial Veterinary Surgeon.*

MILK AS A FOOD UNSUITED FOR THE DIET OF ADULTS.

THE popular idea that milk is one of the most wholesome and nutritious articles of food for use at all periods of life, is by many facts shown to be an error. Cows' milk is admirably adapted for digestion in the stomach of a calf. The bovine stomach is so constructed that it can deal with food in lumps or small masses, on account of the ruminating habits of the animal. It is doubtless for this reason that cows' milk is so constituted that, in the stomach, when brought in contact with the acids and curd-forming ferments of the gastric juice, it forms large, hard, tough curds. Woman's milk, on the other hand, forms small, soft curds. This is one of the chief reasons why cows' milk disagrees with infants, as it almost universally does, when given in an undiluted state. Ass's milk has been found to be much more wholesome for infants than cows' milk. It more closely resembles woman's milk than does the milk of the cow. The equine stomach is simple in structure, in this respect more closely resembling the human stomach than does the bovine.

The tendency of cows' milk to form in curds, is, however, a less serious objection to its use by infants than by adults, for the reason that the infant's stomach is scarcely more than a dilatation of the upper portion of the intestine, being much less pouched in form than in adults; consequently the contents of the stomach of the infant very readily and quickly pass out into the duodenum, where the perfect and complete digestion of milk normally takes place, the pancreatic juice being apparently the most active agent in the digestion of milk. With adults, however, the large curds formed in milk are retained for a much longer time, the digestion of milk in the stomach being imperfect, and microbes in abundance, fermentation of lactose and decomposition of casein take place, resulting in that very disagreeable and miserable condition commonly termed "biliousness," which means, not as is popularly supposed, a disturbance of the liver, but a rottenness in the stomach. The absorption of the resulting ptomaines and a general toxæmia, the germs which milk ordinarily contains in great abundance, encourage the fermentation and decay of the curds in the stomach; while, on the other hand, casein, being a readily decomposable substance, encourages the growth and development of the putrefactive and other organisms with which the fluids of the stomach always abound.

Rondot and Lepine have recently called attention to the fact that milk is not, in its constitution, well adapted to the sustenance of adults; at least, it is not a complete food. It contains too large a proportion of albuminoids in relation to the hydrocarbons. Great numbers of persons are the victims of migraine, bilious or sick headache, dulness of mind, depression of spirits, constipation, and a variety of allied and associated symptoms in consequence of the free use of milk. The common habit of drinking milk is particularly injurious, as a large quantity of milk entering the stomach suddenly and in an undiluted state favours the formation of very large and hard curds. Some years ago the writer encountered a case in which the patient nearly lost his life through this means. Being both hungry and thirsty, upon returning home late at night, he drank, within a few moments, two or three pints of milk. A few hours later he was awakened suddenly from sleep with a terrible distress at his stomach, and great nausea. After retching for some time, he felt a choking in his throat, and reaching down, seized the end of something which he pulled out, and, to his great astonishment, it proved to be, as he declared, "a rope of milk a yard long." Such a solid mass of milk would have undergone putrefaction, and doubtless would have set up grave, possibly fatal, inflammation, if it had not been removed in the manner above indicated.

Mr. Tait related to the writer, a number of years ago, an instance in which a boy, when recovering from typhoid fever, in the absence of his nurse obtained and drank three or four pints of milk. Two or three days later an obstruction of the bowels occurred and a lump was formed in the right iliac region. Mr. Tait was called, and upon opening the abdomen he found the obstruction to be at the iliac valve, and the small intestine was enormously distended. The mass was doughy in character. Mr. Tait undertook to reduce it by a gentle manipulation. By this means he was able to break the mass into fragments, and then he passed it along little by little into the cæcum, thus relieving the obstruction and saving the lad's life.

Sterilization of milk and the use of milk in connection with farinaceous substances, mitigate the evils referred to, to a large extent; still there are persons to whom milk is almost as injurious as are many poisons. Most primitive nations have discovered the unhealthfulness, for adults, of milk in its ordinary form, and have endeavoured to remedy the difficulty by subjecting it to fermentation, thereby converting the lactose into lactic acid, which is a valuable disinfectant and an aid to the digestive process. The natives of Central Africa invariably sour milk before using it by pouring it into a gourd

which is kept for the purpose. The Germans, Scandinavians, Italians, Russians, Hungarians, and Turks adopt analogous methods in the preparation of milk for food, rarely using milk in its raw state. At Carlsbad and almost all other German watering-places, sour milk and black bread constitute the dietetic regimen prescribed for the great majority of the patients. This simple diet is unquestionably one of the most important factors in the cure of many of the dyspeptics who frequent these places, accomplishing as much (perhaps more in some cases) as the celebrated waters which get most of the credit.

Kumyzoon is a scientific preparation of milk, in which the lactose is replaced by lactic acid. In the manufacture of kumyzoon the milk is sterilized, and the pure ferment is employed, so that the inconveniences attending the use of kumyss are avoided by its being made from sterilized milk, and by the addition of steaming. Ordinary kumyss contains multitudes of microbes of various sorts, each of which is developed in each particular acid, ptomaine, or toxine, thus giving to the product a great variety of flavours, and rendering it quite unreliable as regards its properties, either gustatory or dietetic.

Kumyzoon is manufactured by the Sanitarium Health Food Co., Battle Creek, Mich., and 28, College Place, Chicago, Ill. This company is manufacturing kumyzoon according to the formula furnished by the writer, and has it made under the writer's care at the Battle Creek Sanitarium. The manufacturers have now increased their facilities, so that they are sufficient to supply a large demand, and all orders will be promptly filled.

IMMUNITY.

BY J. G. SINCLAIR COGHILL, M.D., F.R.C.P., EDIN.

IMMUNITY, in its medical signification, is that condition of the organism which endows an individual with the power of resisting certain specific infections. The term is used more especially in relation to certain contagious or infectious diseases, such as the exanthemata, which run a more or less determinate course, and some of which are incapable of being reproduced in the individual, or at least in some of them only after the lapse of an indefinite time. The study of immunity is interesting and important in its relations generally to prophylaxis, or the prevention of disease, and specially in connection with the more recent problems of serotherapy.

Immunity may be classed first as natural, and second, acquired. Natural immunity may be (*a*) general, (*b*) limited or relative. We see persons who are continually exposed with impunity to all the various forms of infection. These we would define as enjoying general immunity, while those with limited immunity succumb only to particular contagions.

Acquired immunity again might be classed as (*a*) natural or (*b*) artificial. The former the result in the ordinary way of an accidental infection *per vias naturales*, such as we see after attacks of small-pox, scarlatina, measles, whooping-cough, etc. The latter from an intentional protective inoculation of the materies morbi or contagious element, such as inoculation or vaccination to procure immunity from small-pox.

Many theories had been advanced to explain the several conditions of immunity. Natural immunity has been supposed to result from greater vigour and vitality of constitution, but this can only be partially so, as one sees the most robust succumb to infection which much less vigorous individuals have successfully resisted. The immunity of these latter must be derived from some specific element or condition in their organism, similar to that which remains after an infectious disease has run its course. This natural immunity, which apparently increases with the age of the individual, has been sought to

be explained by the theory of a slowly continuous minute infection from infancy, too feeble to develop the objective phenomena of the disease, but yet sufficient to produce in aggregate the protective influence of a full attack. The bacillus of diphtheria, the comma bacillus of cholera, the tubercle bacillus, and the pneumoccus have all been found on the mucous membrane of the mouth, fauces and nostrils of individuals who had not developed in the slightest degree the specific morbid processes associated with these organisms. In connection with this question of immunity, both natural and acquired, it may be asked, What part do the phagocytes play in the protective process? Do they attack the enemies at the gates, as well as hold the citadel against them?

In acquired immunisation it has been suggested that in every individual there is a certain limited amount of material, the appropriate pabulum of the infecting microbes, which, when used up, their death and the resolution of the related morbid process ensue; but this certainly does not satisfactorily explain the condition attained. The morbid action or disease is due to the toxic secretion or toxin of the microbes; although some authorities, among others Roux, of Paris, seem inclined to attribute it rather to the toxic potency of the dead microbes themselves. It seems probable rather that acquired immunity results from the decomposition or transformation of the toxin into a corresponding antitoxin, which remains and protects. These antitoxins must be of a chemical nature, of some what stable composition, capable also of maintaining a permanent character. They must have their principal seat in the blood dissolved in the serum. That the antitoxins are not only protective but also curative of their corresponding toxins is probably one of the most valuable discoveries in pathology and therapeutics of recent times, and it is impossible to say to what extent its application may extend. In tetanus, and more especially in diphtheria, the curative efficacy of the antitoxins has been established apparently beyond doubt, and although in the latter case Virchow at first opposed its recognition on *a priori* grounds, he had subsequently to admit, as he well put it, "the brutal logic of fact."

Reviewing the history of the subject, it is strange to note the long intervals between the dawn of the idea and its several developments. The starting point was inoculation for small-pox, next Jenner's discovery of vaccination, then the long pause until 1857, when Professors Faye, and Boeck of Christiania carried out their disastrous experiments, which they termed syphilisation, next Pasteur's rabies antitoxin, followed by Koch's tuberculin, which is certainly of the nature of an antitoxin, and of the therapeutic efficacy of which, when judiciously employed, I am still convinced, and then more recently the antitoxins of tetanus and diphtheria. Brief reference may here be made to the alleged antitoxin properties of Dr. Viquerat of Geneva's serum of the ass or mule immunised by repeated inoculations of tubercle. A carefully observed series of trials of this material failed to show that it had any specific effect on the pulmonary lesion. In nearly all the cases, however, there was experienced a feeling of exhilaration or *bien-aise* after the inoculation, and there was also a marked gain in weight recorded. It thus seemed to act mainly as a stimulant to nutrition. A series of corresponding observations with the simple unmodified serum of the ass, kindly prepared for me by Dr. Armand Ruffer, gave precisely similar results—indeed, in both sets of cases the effects seemed identical with what would be expected from the transfusion of a similar amount of blood.

ABDOMINAL SURGERY.

BY PROFESSOR J. MACQUEEN, F.R.C.V.S.

The numbers refer to a list of references given at the end of the paper.

(*Continued from page* 140.)

DURING the next four days he drank from 12 to 18 pints of water every 24 hours, but he refused to eat either hay or grass. He groaned when moved, was dull and very stiff. Two days later his appetite returned, and by the ninth day he fed well, looked bright, and moved freely. The wound healed rapidly. In about a fortnight he was put to work on the land, and in September of the same year he was bought for 1,100 francs by a Paris merchant, who was very much pleased with his purchase.

It is to be regretted that the report does not contain particulars of the length of the incision, and of the material used in stitching the bowel. A furrier's suture implies the passage of the silk or other thread through the whole thickness of the gut, and, as a consequence, considerable risk of leakage.

To relieve obstructed bowel in the horse, laparo-enterotomy was performed by Veterinary-Captain SMITH (No. 34) in 1887, by Messrs. DOLLAR, RICKARDS, and ROGERS (No. 35), and by Mr. GARRY (No. 36) in 1894. These cases did not recover, but the reports show that death was mainly attributable to the operation having been too long delayed.

Before CHARLIER (1850) made known his method of spaying *per vaginam*, mares were always castrated through the flank, and occasionally even now, as a successful case recently recorded by MARTIN (No. 37) goes to prove, the older operation is preferred.

Cryptorchid horses have been castrated through a wound in the flank by Serres, Barfœd, Hoyer, and Cadiot; and I may add that the castration of abdominal cryptorchids is usually effected by laparotomy only slightly modified.

Laparotomy has been performed oftener on cattle than on horses. Few fatalities have been recorded. In oxen invaginations have been reduced, herniæ liberated, and the bowel has been resected. Probably the earliest operation is a laparo-enterectomy or resection performed by Thomas Brayn, a cattle-doctor, of Yeaton, Salop, and quoted by CHESELDEN (No. 38) in 1730. Brayn was called to an ox suffering with obstinate constipation. He opened the flank, searched for the obstruction, and found "the gut was about the stoppage putrefied for about three-quarters of a yard." This part he excised, then drew and stitched the ends of the sound gut together upon "a hollow keck" three or four inches long, and closed the hole in the flank. The ox passed the keck, recovered, and served its owner usefully for several years.

Intussusception was successfully reduced in 1839 by ANKER, of Berne (No. 39), who had operated frequently in cases of pelvic hernia.

MEYER (No. 40) opened the right flank of a cow, brought the invaginated bowel outside, and failing to effect reduction, excised about six feet of gut which was becoming gangrenous. To facilitate anastomosis, Meyer inserted into the bowel a piece of paper rolled up and greased. The edge of the posterior gut was inverted, and the interior end passed into it for about an inch and a-half. The serous surfaces were united by a continuous suture of well-waxed thread passed through the serous and muscular coats.

TACCOEN (No. 41) operated on two cows. From one he removed ten inches of gut. The external wound healed in thirty-five days. In the other cow an artificial anus formed, but this did not impair her health.

RIEDINGER (No. 42) treated ten cases of invagination in oxen. Seven had to be slaughtered; and in three the invagination was reduced, but only two recovered completely.

DEGIVE (No. 43) diagnosed invagination in a cow. He incised the flank,

brought the intestine outside. and, after considerable difficulty, effected reduction. The cow recovered in three weeks. RIIS (No. 44) reports a similar case. He found the volvulus with ease and drew it to the opening in the flank. The gut was swollen and congested. It was bathed with weak sublimate solution, gently pressed for fifteen minutes, and reduced. The cutaneous wound was closed with fifteen button stitches. The animal fed in the evening and completely recovered.

SIMPSON (No. 45) attended a cow that was vomiting. He diagnosed intussusception and proposed laparotomy. He operated on the cow standing, but failed to find the affected gut. The cow died next day. Examination discovered invagination of the ileum.

Since 1864 laparotomy has been resorted to in six cases of uterine torsion in cows. Reduction was accomplished, and all recovered.

Of laparotomy in dogs little need be said. Always a favourite of the physiologist, for many years the dog has been almost indispensable to the surgeon. The various abdominal operations—'ostomies, 'otomies, and 'ectomies—now practised with commendable results on man, were first tested on the dog; and when it is remembered that nearly every organ inside man's abdomen has been advantageously wounded by the surgeon's knife, some estimate may be formed of the value of the dog in experimental surgery. Nearly a century ago Travers, Astley Cooper, and Thomson—to mention only surgeons of this country—demonstrated the feasibility of laparo-enterotomy on dogs. But it does not appear that the publication by Travers, in 1812, of "An Inquiry into the Process of Nature in Repairing Injuries of the Intestines," induced many veterinary surgeons to try the operation. This indifference to operative surgery in veterinary practice is unaccountable. Perhaps it is only "another of those innumerable instances in which veterinarians have searched not and remained uninformed."

STEEL (No. 46) refers to laparotomy and enterectomy in the treatment of obstruction and invagination, and within recent years a few attempts have been made in this country, but I have not been able to find the record of a single successful case in English veterinary works.

FELIZET (No. 47) reports four cases of obstruction by corks. Two of the dogs, left to nature, died; the others, treated by laparo-enterotomy, made an excellent recovery.

DEGIVE (No. 48), operated on a dog in which obstruction had been diagnosed by abdominal taxis. He opened the abdomen about an inch to the left of the linea alba by an incision three inches long. Having found the obstruction, he incised the bowel at its convex curvature and extracted a pebble. The wound in the gut was closed by a continuous Lembert's suture, and the abdominal wound was sutured in two layers. For the twelve hours immediately following operation the patient was offered only a little plain water, and during the next eight days milk diluted with water was given five or six times a day. The dog was discharged on the ninth day, and the external wound under simple antiseptic dressings soon healed.

PARKES (No. 49) experimented by shooting dogs in the abdomen. Of twenty-one treated by laparotomy after shooting, ten died in from three days to three weeks, and nine recovered.

Diagnosis.—Abdominal diseases amenable to surgical treatment, with few exceptions, may be diagnosed in dogs by manipulation, in cattle by rectal exploration or by rumenotomy, but in horses diagnosis is extremely difficult. The size, disposition, and relations of the viscera, and the common symptoms they provoke when diseased, give little hope of greater accuracy in diagnosis so long as only current methods are pursued. In the future, exploratory incision may be reasonably expected to give some assistance. When it has been shown that the peritoneum can be opened without risk to the patient, or

without adding to the gravity of the disease that may call for relief, present difficulties will diminish and in time perhaps disappear. This view, in face of past and present practice, may be too sanguine; but with anæsthetics to suspend movement, and antiseptics to prevent contamination of surgical wounds, expectant treatment and dangerous delay may yet give place to more active measures.

Assuming that cases of volvulus, invagination, internal herniæ, and obstruction by bands, pedunculated tumours, or by concretions, can be treated by surgical interference, the question arises: How may these conditions be distinguished from other abdominal affections? At once I confess my inability to give a satisfactory answer. The history of the patient; the character of the pain, whether intense and continuous, or subacute and intermittent; distension, local or general; constipation, persistent or interrupted; the action of eserine; the posture of the patient; backing; straining; the quantity of urine passed; the rejection of clysters; expulsion of flatus; and the symptoms sometimes afforded by palpation, percussion, and auscultation, merely suggest a possible cause—all are fallacious and unreliable in the diagnosis of the diseases just mentioned. If examination *per rectum* gives more assistance, it does not always yield satisfaction. The height of the operator and the length of his arm should be considered as well as the state of the horse's bowels. In a healthy horse, fifteen hands high and of medium coupling, the hand may reach the cœliac axis and the last rib. In a long-loined sixteen-hands carriage horse, lying on his right side, I have felt without difficulty the border of the splsen, the last rib, and the left kidney, but in the standing horse I have never reached the spleen. Experiment warrants the assertion that an imaginary vertical plane falling from the first lumbar vertebra to midway between the xiphoid and umbilicus represents the forward limit of rectal exploration. Employing the left hand for the right half, and the right for the left half of the abdomen, all the viscera behind this boundary may be examined more or less satisfactorily—in the healthy horse. In abdominal disease, especially in obstruction, the intestines are often crowded towards the pelvis, and frequently the hand cannot pass onwards in consequence of straining and pressure from distended bowels. But when the hand has reached the flank it may, and sometimes does, discover displacements, volvulus, or invagination; recognise and remove concretions; ascertain the condition of the contents of the colon, cæcum, floating colon, and small intestine; and in herniæ distinguish and liberate omentum and bowel. Cases that give no sign to exploration are uncommon, and without this precious aid diagnosis, whether positive or negative, is doubtful. In this, as in other diagnostic efforts, the spirit of the practitioner dominates procedure. With faith in possibilities, rectal exploration may be tried again and again, and information may be gained at every investigation.

LAPARO-ENTEROTOMY.—Practical acquaintance with surgical wounds of the horse's flank had convinced me that the bowel could be withdrawn from the abdomen, exposed for some time, manipulated and replaced, without danger to life, in spite of almost total neglect of antiseptic precautions. But I was not sure if the horse would tolerate incision and suture of the gut. To determine this point, and to ascertain the best way to operate for the relief of intestinal obstruction, I commenced, in February last, a series of experiments on horses. I will give particulars of the materials and instruments employed, and a short description of the procedure, with the clinical reports of two or three cases.

Materials, instruments, &c., required.—Four large and twelve small Turkey sponges, for use inside the abdomen and about the bowel. Twelve yards of tarlatan cut into two-yard lengths, for packing round the bowel brought outside the wound. Four sponge cloths for laying on abdomen and thighs to catch dust during operation, to wipe the skin, and for rougher work *outside* the wound

Three enamelled iron trays to hold instruments, ligatures, and needles. Four zinc pails to hold hot water, sponges, lotions, &c. One small bucket marked in pints to measure hot water for making solutions, &c. Some 20 per cent. carbolic soap for washing hands and flank, and for shaving. One aseptic scalpel and a razor. Two elbowed scissors, sharp and blunt pointed, to divide muscles, open peritoneum and bowel. Two sponge-holding forceps. Two Thornton's T-shaped forceps to stop bleeding from skin or muscle. Two Wells's catch forceps, and one or two spring and dressing forceps. A few straight and curved suture needles. Twenty milliners' needles, straws No. 5, for stitching the gut. Chinese twist for all sutures—No. 1 for the gut, No. 3 for muscles, and No. 6 for the skin. A fine trocar and cannula, to puncture, if necessary, distended bowel. A convenient supply of hot water, and a piece of fine muslin several layers thick for use as a sieve for water to be used for lotions or for irrigation. Chloroform and an inhaler with sponge; and some pure carbolic acid in a graduated bottle. For dressing the wound the following should be ready:—Iodoform and tannin, 1 to 3; antiseptic cotton-wool and tow; carbolised gauze; a piece of calico, six yards by nine inches; roller bandages; and a few safety-pins.

Preparation.—The small sponges may be obtained ready for use from any wholesale druggist. They are known as Milne's aseptic sponges. Probably the large sponges can be purchased in the same condition. I prepared my sponges in this way:—After beating out the sand the sponges were placed for four or five days in cold water, which was changed daily, then transferred to a solution of hydrochloric acid, an ounce to the gallon, where they remained for twelve hours; from this they were placed under the cold water tap and turned about under a constant stream for an hour or two; then each was thoroughly washed in plenty of hot water, squeezed as dry as possible, and finally placed in 5 per cent. carbolic solution.

The tarlatan, cut into two-yard lengths, was washed in hot water containing Hudson's powder, then thoroughly rinsed, and placed beside the sponges in carbolic. The sponge cloths were boiled, rinsed in cold water, soaked in 5 per cent. solution of carbolic, and then dried.

The Chinese twist was stretched by winding each skein on a bit of wood (3 inches by 1½ inch), plunged in hot water, and boiled for ten minutes; then stretched again by winding on another bit of wood, and finally placed in a wide-mouthed bottle containing 5 per cent. solution of carbolic acid.

The scissors, forceps, needles, scalpel, &c., should be kept together in a sheet-iron case, which may be placed on a stove or near a fire.

After operation, the sponges, instruments, &c., must be cleansed. The sponges and tarlatan are placed together in cold water, which is frequently changed; then the sponges are transferred to hot water containing washing soda—4 oz. to the gallon—and left there for a day. From this they are placed under the cold water tap, then washed separately in hot water, dried in the sun, divested of hairs, and again placed in 5 per cent. carbolic. The tarlatan is washed as before with Hudson's powder, dried, and placed beside the sponges. For keeping sponges and muslin a two-gallon pail, with hinged lid, will be found very convenient. The sponge cloths, after soaking in water, are boiled with soda, rinsed, and dried. The instruments are scrubbed and washed in hot water containing Hudson's powder, dried, and enclosed in the iron case, which is then placed near a fire.

Preparation for Operation.—Before casting the horse, the flank from spine to groin and from haunch to sixteenth rib is clipped and washed. When the horse is under chloroform, the flank, within two or three inches of the boundary marked by clipping, is shaved and disinfected. While these preliminaries are proceeding, the pails and trays are arranged and filled. All the solutions must be warm, and the water used in their preparation passed through muslin.

Pail No. 1 is filled with 5 per cent., and pail No. 2 with 2½ per cent. solution of carbolic acid. The trays are filled with hot solution of the same strength as pail No. 2. The sponge cloths are placed in No. 1, and kept there until required. The sponges and tarlatan, after having been squeezed as dry as possible, are placed in No. 2. In one tray are placed the milliners' needles, twelve of which are threaded with twist No. 1; another tray contains scissors, forceps, and scalpel; and the third contains reserve instruments, suture needles, and twist Nos. 3 and 6. Pail No. 3 is filled with hot water for rinsing hands and instruments; and pail No. 4 is filled with boiling water, which is protected from dust and allowed to cool. This water will be required to wash the bowel after suture.

Abdominal Incision.—The linea alba offers the least vascular and shortest route to the interior of the abdomen. Through an incision of the white line any organ within the cavity can be felt, the small and large intestines in part can be seen, and to some extent portions of these viscera can be withdrawn; but the colic mesentery is too short to permit the first part of the floating colon to pass through the wound. Besides, if the incision is made at this point the wound does not heal rapidly, and adhesion between its peritoneal surface and omentum or bowel is a probable complication. In the horse, incision of the abdomen an inch or two to the right or left of the linea alba is equally objectionable. When the floating colon has to be opened, I prefer to reach the bowel through the flank. In opening the flank I make three wounds before touching the peritoneum. The first divides the skin, fascia, and *external oblique muscle;* the second the *internal oblique;* and the third the *transversalis.* The first starts at a point four inches below the lumbar transverse processes, midway between the angle of the haunch and the last rib, and passes downwards and forwards for seven or eight inches.

(*To be continued.*)

THE SIMLA HORSE CASE.

On the 18th July, Captain Beadon, District Judge, gave judgment in what is known as the horse case. It was a suit brought by Lieutenant-Colonel Disney Roebuck against Mr. E. P. Henderson, C. S., for the price on a horse, Rs. 800. The horse was at Chakrata at the time of sale, the purchaser being at Simla, and the animal was bought solely for the use of a lady on the strength of a description in an advertisement in the *Pioneer*, and of certain further statements by the seller in the course of correspondence between the parties. The horse was described *inter alia* as perfectly sound, 14-1¾ high, and perfectly well mannered. When he arrived at the buyer's residence the buyer had him professionally examined, after giving him 22 hours' rest. Veterinary-Captain Rutherford certified the horse to be unsound, owing to very recent and old brushing marks on both fetlocks and coronets, such a habit of brushing endangering the rider's safety; 14-0½ to 14-1 in height; and on the facts, as stated to him, not well mannered for the purpose for which he was bought. Mr. Henderson thereupon declined to accept the horse, but the seller insisted on the payment of the price agreed on, and eventually filed a suit to enforce payment.

The court, in dismissing the suit, finds that the horse was unsound before he was advertised, also before he was despatched from Chakrata, and also when he arrived in Simla, the unsoundness consisting of brushing, due to defective formation, and rendering the horse dangerous to his rider, and especially to a lady. Also that the horse is only 14·1 in height, each of these facts constituting a breach of warranty; and that Mr. Henderson did not accept the horse by agreeing to a proposal of the seller's that the latter should

forward the animal to Simla in charge of his own syce, defendant therefore not being precluded by the forms of section 117 of the Contract Act from rescinding the contract. The court further finds that the horse was correctly described as perfectly well mannered, the defences on this head and on two pleas of law as to the agreement being void for want of consent, and owing to a proved joint mistake of fact as to height, therefore failing. The court rejects the contentions of the plaintiff's counsel that Mr. Henderson's conduct in the case shows him to be a person unworthy of belief, and that he was guilty of negligence in the transaction. The court records that Mr. Henderson admitted the good faith of Colonel Disney Roebuck from the first, and otherwise acted during the trial in a manner considerate to the plaintiff.

The case has excited much interest. There was a conflict of the evidence given by veterinary experts, who held opposite views as to brushing constituting unsoundness. Colonel Roebuck relied on the certificate of soundness given by Veterinary-Colonel John Anderson, in Bombay, on November 2nd, 1894.—*Sent by R. Rutherford, F.R.C.V.S., Edinburgh.*

CONTAGIOUS DISEASES ANIMALS ACT, 1894.

COMBINED SUMMARY OF RETURNS for the three weeks ending July 27th, August 3rd, and August 10th, 1895.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot-and-Mouth Disease.
None.	*Slaughtered* Diseased, etc. ...3544 Died ... 411 Suspected 150 4105	Fresh Outbreaks 10 Animals Attacked 14	Fresh Outbreaks 51 Animals Attacked 83	Dogs Killed 20 Sheep ,, 5 Sheep Died 3 28	None.

SCOTLAND.

None	*Slaughtered* Diseased, etc. 295 Died ... 123 418	Fresh Outbreaks 4 Animals Attacked 6	Fresh Outbreaks 2 Animals Attacked 6	None.	None

IRELAND.

None.	*Slaughtered* Diseased, etc. ... 296 Died ... 152 Suspected 170 618	None	None	Dogs Killed 21 Cattle ,, 5 Goats ,, 2 Sow ,, 1 29	None

Legal News.

TRADING AS A VETERINARY SURGEON.—At the North Riding Police Court, at the Town Hall, Scarborough, on the 8th August, before Mr. Charles Woodall

(in the chair), Sir Frank Lockwood, Q.C., M.P., Mr. J. E. Ellis, M.P., Captain the Hon. F. Johnstone, Colonel Kendall, Mr. John Dale, and Mr. Leasowe Walker, Thomas Danby Belt, farrier, of Hunmanby, was charged with having illegally practised as a veterinary surgeon without having a certificate at Gristhorpe on the 9th of May. Mr. G. E. Royle, instructed by the Royal College of Veterinary Surgeons, appeared for the prosecution. The defendant having pleaded guilty, Mr. Royle, addressing the magistrates, said: It seemed that on the 9th of May, Mr. Belt, through the agency of his son, who lived with him, sold a bottle of horse medicine to Mr. Sawdon, of Scarborough, which bore the label "Belt's antispasmodic gapes medicine for horses. Prepared by T. D. Belt, veterinary-surgeon, Hunmanby." Mr. Royle, having pointed out that the maximum penalty was £20, said the College were going to put in operation energetic measures for the suppression of the improper use of the title by farriers and cow doctors. It was clearly in the minds of the Legislature when they passed that Act not only to protect the Royal College, but also to act in the interests of the public at large. A fine of £1, including costs was imposed.

A VETERINARY SURGEON ON HIS RIGHTS.—At Manchester City Coroner's Court recently, when the jury were about to be sworn, a gentleman in the jury box asked the Acting Deputy Coroner, Mr. L. J. Aitken, whether he was not entitled to be excused from serving, seeing that he was a professional man. Mr. Aitken—What are you? Applicant—A veterinary surgeon, and I have a number of cases awaiting my attention at home. I, as a professional man, question the right of the police in summoning me to act as a juryman here. According to Act of Parliament I ought not to serve. Mr. Aitken—If you call my attention to any Act of Parliament which says so, I will excuse you. Have you got it here? Applicant—I have not got it with me, but I am a professional man. Mr. Aitken—I do not dispute that fact, but I should like to see the Act of Parliament to which you refer, and which you say exempts you from serving. I will give you time to fetch it. Applicant (raising his voice)—It will be in your Act. I may not be able to find mine to-day. I am only asking for my rights. I am a professional man. (Laughter.) Mr. Aitken—Listen to me; I don't want to be lectured by you, if you are a professional man. I will allow you to go home for the Act of Parliament which absolves you from serving, and also for your diploma. (To the officer of the Court)—Has this point ever been raised before? The officer—No, sir. The gentleman is not summoned here on his qualification as a veterinary surgeon. In the lists he is described as a shoeing smith. (Laughter.) Applicant—I may not be able to find the Act to-day, but I'm a professional man. (Laughter.) Mr. Aitken—Well, I'll let you go now, but I will have you summoned for Wednesday, when you must bring the Act of Parliament with you. If you don't find it by Wednesday, I will see that you are summoned on Friday, and on each succeeding day until you do find it. Applicant—Very well; that's reasonable; but I only want my rights. I'm a professional man. The applicant then retired.

VETERINARY PROSECUTION AT RYE.—Recently, at Rye County Bench, before Major Stileman and other justices, H. Leden, of Bread Oak, Brede, was summoned by Mr. J. C. Buckwell, at the instances of the Royal College of Veterinary Surgeons, for unlawfully acting as a veterinary surgeon without being qualified so to act, on July 1st. Mr. C. Hayles appeared for defendant, who pleaded guilty. Mr. Buckwell produced the authority from the Royal College of Veterinary Surgeons to institute the proceedings under the Veterinary Surgeons Act, 1881, which provided that if after 31st December, 1883, any person, other than a member of the Royal College of Surgeons, acts or says he acts as a veterinary surgeon, he shall be liable to a penalty of £20. The facts of the case were that Mr. Leden lived at Broad

Oak, Brede, and there exhibited a plate stating that he was a "horse breaker and surgeon for horses and cattle." It was to the latter portion of this that the action applied, and the Royal College of Veterinary Surgeons were bound to protect themselves against misrepresentations of the kind. Gentlemen passing through the College had to undergo a very long training, and it was very necessary that they should be protected in their profession. The prosecution did not suggest that Mr. Leden acted wilfully, for he (Mr. Buckwell) believed he was a foreigner, and he would ask, therefore, that a nominal fine only be inflicted. He had only been at Broad Oak about four months, but he had exhibited the plate referred to at Silverhill, where he previously resided.—Mr. C. Hayles, on behalf of the defendant, admitted that Mr. Buckwell had stated the case very fairly, but he had forgotten to state that a man might act as a veterinary surgeon, but must not state that he did so. Such a person also could not recover any fees. No objection having been made to defendant exhibiting his plate at Silverhill, he had no idea, being a foreigner, that he was breaking the law. He had studied and practised veterinary surgery abroad, and there was no doubt that he was fully qualified to take care of animals, but of course English veterinaries wished to be protected, as well as English solicitors (laughter). The error was a matter of ignorance, and as it was the first in the district that had been taken under the Act, he hoped a nominal fine would be imposed as a warning against others in the locality to keep within the necessary bounds.—A fine of £1 and £1 1s. costs was imposed, a fortnight being allowed in which to pay the money.

Army Veterinary Department.

Vety.-Lieut. W. E. Russell will assume veterinary charge of the horses of the 1st Division Field Artillery in the Grand Depôt Barracks, Woolwich, vice Vety.-Captain T. A. Killick; also of the 2nd Division Field Artillery, West Rear Range, vice Vety.-Major B. L. Glover.—*Broad Arrow.*

Vety.-Lieut. Col. C. Clayton will vacate the appointment of Inspecting Veterinary Officer, Bombay Command, on Oct. 11th.—*Army and Navy Gazette.*

London Gazette 6th August, 1895.

Vety.-Lt.-Colonel F. Duck, Principal Veterinary Officer in India, is granted the temporary rank of Vet.-Colonel whilst so employed.—Dated 1st April, 1895.

Vety.-Major W. S. Adams to be Vety.-Lt. Colonel, vice C. Phillips, F.R.C.V.S., deceased.—Dated 15th June, 1895.

London Gazette, August 16th.

The Queen has approved of the retirement from the service of the undermentioned officer:—Bengal Veterinary establishment—Veterinary-Lieutenant-Colonel G. Kettlewell, dated 19th February, 1895.

Retired List.—Staff-Veterinary-Surgeon R. J. G. Hurford, R.L., has been granted a good service pension of £50 per annum, vacated by late Principal Veterinary-Surgeon J. Collins, R.L., deceased.

Movements.—Veterinary-Captain T. A. Killick returned to Woolwich on the 10th inst., and Veterinary-Lieutenant F. M. Carr to Aldershot on the 16th inst., on completion of duty with mobilized Reserve Force.

Veterinary-Captain A. J. Haslam returned to Dublin on termination of the manœuvres, Eastern Force, Ireland, on the 17th instant.

Veterinary-Captain R. W. Raymond accompanied the 8th Hussars from Hounslow on the 14th inst., and Veterinary-Captain T. Marriott with 7th

Dragoon Guards from Shorncliffe on the 3rd instant, for duty with the Aldershot Cavalry manœuvres.

The death of Principal Veterinary-Surgeon James Collins leaves vacant a distinguished service reward, one of two granted to the department. Mr. Collins was in veterinary charge of the Inniskillin Dragoons throughout the Crimean War, having succeeded to the appointment at the death of Mr. Kelly, who was drowned when the transport *Eupatoria* was burnt *en route* to the Crimea. There now only remain three veterinary officers who were at the Alma and Balaclava, in addition to the siege of Sebastopol, viz., Veterinary-Surgeon Stephen Price Constant, who was with the 17th Lancers and 5th Dragoon Guards; Veterinary-Surgeon Felix Delany, on the general staff throughout the campaign; and Veterinary-Surgeon T. P. Gudgin, who was with the Scots Greys and 5th Dragoon Guards. Staff Veterinary-Surgeons A. J. Owles, John Barker, R. W. Murray and Herbert Sewell were present at the siege of Sebastopol.—*Broad Arrow.*

Extracts from Foreign Journals.

ON THE THERAPEUTIC VALUE OF CHLORIDE OF BARIUM.

Dr. W. Dieckerhoff, of Berlin, in a second article contributed to the *Berliner Thierärztliche Wochenschrift*, proclaims the virtues of this drug and gives the dose to be administered as follows: When the heart-beat is moderately frequent and the maxillary pulse is full and soft, the dose to be injected into the jugular vein varies from 1·25 grammes downwards to one gramme, ·75 gr. and ·50 for horses according to size, weight, and condition; for ponies it may go down to ·30 gr. (1 gramme = 15·43 grains). But if there is found on examination of the sick animal any considerable heart-weakness with a quickened pulse and lowering of strength, then for intravenous injection smaller doses must be given, according to the size of the horse, from ·75 to ·30 gr.

"The advantages which chloride of barium possesses over all other drugs, whose object is to cause peristalsis of the bowels, is that, when applied intravenously, it produces immediately contractions of the whole bowel and that these contractions persist longer. Judging by what I have seen in the successful treatment of many cases of colic, I am distinctly of opinion that chloride of barium in suitable doses is the most effectual carminative in cases of flatulent colic in the horse. Excluding colics which are caused by incurable stoppage of the bowels, we may say that the production of gas through abnormal fermentation of the contents of stomach and intestines is the most dangerous factor in the rise and progress of colic disorder. As horses are unable by eructation to get quit of this accumulated volume of gas, and as there is no chemical means for combining these gases, there remains only the chance of expelling them through the bowels. It is quite obvious that any means of expelling these gases quickly and effectually must be of great value in the treatment of colic. Even the administration of small doses of chloride of barium may in the gravest cases bring about extremely favourable therapeutic results. That the drug in all cases of incurable stoppage of the bowels remains ineffective goes without saying. I wish also to state distinctly that in cases of chronic colic (paralysis of the cæcum or colon), I have generally found the venous injection of the drug to act merely as a palliative; in such cases the colic attacks have returned, for the most part after the lapse of a few days. Yet, apart from these, there remains a very considerable number of cases in which chloride of barium, when the proper dose is given, brings sure and speedy help. That the effect of the drug is to produce sometimes on the bowels for the next

two to three hours after administration, painful sensations (colic symptoms) is not a serious objection, considering its value.

"The administration of chloride of barium through the right or left jugular vein is generally the most successful in horses. If in doing this the head of the horse is kept as high as possible, the operation is safe and easy. A canula of suitable width and with a convex point (as made by Hauptner, of Berlin, to my order) may be easily introduced through the skin into the jugular, and then the dilution of the chloride, already prepared and put into a syringe, may be easily injected into the vein through the canula held by two fingers. With a little practice, the surgeon will perform this operation as easily as a subcutaneous injection. I have not noticed for a long time past any trace of inflammation in the jugular veins of horses thus treated.

"It is a very good plan to keep carefully weighed doses of the chloride ready for venous injection in dry, well-corked phials, which would hold about 10 grammes of water. No change either in quantity or quality of the drug is produced thereby. In case of need the dose may be diluted with water in the phial, and this occupies scarcely a minute. The dilution is then to be poured into a small saucer, from which it may be absorbed by the syringe. To keep the drug for any length of time in aqueous solution is not advisable, as evaporation takes place through the cork, and the effect of the drug becomes uncertain.

"I will give the results of a case that came under my notice on 13th July last. On the evening of that day, a Belgian mare, a strong, heavy animal, was brought to me. She had been ill for three hours, and the surgeon, who attended her and came with her, told me he had first given her extract of aloes inwardly and then, at 6.30 p.m., one-tenth gramme Physostigm. sulph. subcutaneously. I examined the animal at 7.30 p.m., and found, in addition to severe pains, pretty severe intestinal flatulence, short, ringing sounds in the bowels—occasionally the "sound of falling drops." Pulse 68, breathing 40 and snorting, frequent cowering, and all the other indications of severe intestinal pain. I had her walked about the yard, and observed that she strained from time to time at the rectum, and vented two balls of dung and a quantity of wind, which I attributed to the operation of the physostigmin. In the course of the next quarter-of-an-hour, the inflation of the belly increased, and the breathing became more laboured. I determined, therefore, in view of the symptoms, and in consideration of the fact that one and three-quarter hours before, a subcutaneous injection of one-tenth gr. of physostig. sulph. had been given, to administer a weak dose of chloride of barium intravenously, in order to compel stronger bowel-contraction, and thereby expulsion of the intestinal gas. I ordered a dilution of seven-tenths gramme chloride of barium in six of water (equal to chloride of barium 11 grains, water 1½ drams), and had this injected into the right jugular. In two or three minutes the animal showed great straining at the rectum; this went on for ten minutes, and during that time the mare voided a small quantity of fæces. The painful sensations were not much stronger than before. After the mare had been brought into the stable, she lay down at once, and tried, from time to time, to turn herself. Within the next half-hour great quantities of intestinal gas were expelled through the rectum at short intervals, and thereby the inflation of the flanks was visibly reduced; occasionally there were to be noticed sharp spasms of intestinal pain, but about 9.30 p.m. (an hour after the injection), the mare was lying quiet. She was eating oats and hay next morning with vigorous appetite, after having copiously defecated during the night, and was evidently quite cured."

A Case in Point.

Veterinary Surgeon Carl Angerstein of Bützow reports the following cas

to the *Berliner Thierärztliche Wochenschrift*, as showing the value of Dr. Dieckerhoff's new treatment of colic:—"On the 8th June last, at 5 p.m., a mare about 10 years old and weighing about 10 cwt., was brought to me for treatment. It was reported to me that she had shown symptoms of colic since 4 a.m.; about 10 she had voided a small quantity of hard fæces, and then flatulence had set in. The mare had had administered to her by her owner a quantity of strong coffee and an asafœtida pill, and had not defecated since. She had been fed on green clover for some days past, and had eaten a pretty large quantity of this on the evening before she became unwell. I found her pulse 78, breathing 36. Conjunctiva reddened diffusely; right flank very much swollen; intestinal sounds not perceptible. The animal was very restless and could scarcely be kept on her feet. Examination per rectum showed great accumulation of food masses in the great intestine, condition normal. Diagnosis: colic from constipation or over feeding. Treatment: cold water clyster, unsuccessful; at 5.50 p.m. I gave the mare a bolus, as follows:—

Barii chlor.,	10 grammes.
Sodii chlor.	10 ,,
Rad. Rhapontic.	
Aquæ quant. suff.	

Twenty minutes after two little hard balls of fæces are ejected; patient continuously restless. Two hours and ten minutes after giving the bolus, about a wine-glassful of thin, watery fæces of a bright yellow colour trickles out of the rectum, and by the hand a soft mass, the size of a hen's egg and covered with slime, is removed from the same region. The peristalsis has in the meantime ceased, but occasionally intestinal sounds are to be heard for a second or two at a time in the great intestine; after 8 p.m. neither movement nor sound perceptible. About 10 p.m. I administered:—

Hydrarg. subchlor.	4 grammes.
Tart. emetic	8 ,,
Rad. Rhapontic. pulv.	12 ,,
Aquæ. quant. fiat bolus.	

The patient now becomes very restless, alternately lying down and jumping up; at 10.30 p.m. she suddenly crouches together, remains lying on her side, her feet spasmodically drawn in under her body; she is perfectly apathetic and makes no response to either blows or cries; pulse, 78 and feeble, fluttering after every sixth or seventh beat; breathing 46, groaning; surface of the body warm. Exactly at 12 o'clock the patient jumps suddenly up and gas is expelled from the bowels, but only to a small extent. The animal stands or lies quiet till 6 a.m., the peristalsis is somewhat reduced; at 7 a.m and 9 a.m. fæces are passed. From this point onwards the animal is quiet, takes a few mouthfuls of water, and nibbles a little hay, but defecation has again completely ceased; not till the 10th, at 9.20 a.m., do fæces appear in any considerable quantity (after administration, at 9 a.m., of one-tenth gramme ether. sulph. subcutaneously); the peristaltic action is severe, and thin watery fæces are discharged about every 20 minutes or so. Towards midday the mare is able to take a little oats, a few raw potatoes, and some water."

To this communication Dr. Dieckerhoff appends a note in the *Wochenschrift* as follows: "It is very difficult to give the exact dose demanded by chloride of barium, when it is administered in the form of a bolus or in dilutions. As we all know, it is not always possible in such cases to prevent some of the drug from being lost. As the absorption of exactly measured doses of chloride of barium is more easily and more certainly attained by intravenous application, I always employ this method and this alone in the treatment of colic, in the quantities given above; the results are always excellent, except when there is incurable stoppage of the bowels."

Notes and News from Foreign Journals.

A Triple Birth.—M. A. Lucet states that in the month of May, 1892, he was sent for at four in the morning to deliver a six-year-old cow, which already, an hour previously, had given birth to a perfectly-formed living calf. The second calf, said the owner (who was sure it was a case of twins), was badly placed and would not come out. M. Lucet soon found out the cause of the trouble; the uterus still contained *two* calves, which both showed front presentation, and were in the dorso-sacral position, and were obstructed by the pelvis. One of them, however, was farther forward than the other, and this latter was pushed back for a moment, whilst the former was being dragged out. In a few minutes delivery was accomplished, but unfortunately the two last-born calves died. The first-born, which afterwards throve very well, showed back presentation at birth, and was in the lumbo-sacral position. The mother did not suffer in any way from this gestation and triple birth.—*Recueil de Médécine Vétérinaire.*

An Egg with Three Yolks.—The same surgeon reports that he received some time ago from one of his clients a hen's egg of extraordinary size but normal shape. It weighed $5\frac{1}{4}$ ounces, averaged and measured "from pole to pole" $4\frac{3}{4}$ inches, or $8\frac{3}{4}$ inches at its greatest circumference, and 7 inches round the middle. The egg was carefully emptied of its contents, and it was found to contain three yolks of ordinary volume.—*Ibid.*

Precocious Lactation.—A surgeon was called in on 10th May, 1893, to see a heifer twenty-two months old, which had been pregnant since the 22nd October preceding, and which for some days past had been showing an affection of the udder. The animal showed all the signs of being in general good condition. She showed, it was true, a distinct swelling of the udder, which was bulky, red, doughy, hot and painful, but this affection was purely local, and had no influence upon the great functions. The teats were quite supple, and, when squeezed, allowed colostral milk to escape, which was perfectly normal. Being persuaded that it was merely a case of physiological congestion, and nothing more, the surgeon ordered anointing of the udder with *unguentum populeum* and frequent squeezing of the teats for the purpose of drawing the gland and relieving it of the product of secretion. The surgeon again visited his patient on the 21st of May, and found that everything had happened as expected. The congestion had disappeared, the secretion of milk was established, and this heifer, twenty-two months old, in the seventh month of her pregnancy, was giving six to seven quarts of good milk every day. This abnormal secretion went on till she calved, and then it doubled, according to the report of the owner.—*Ibid.*

Importation of Diseased Sheep.—With reference to the case of the infected sheep landed at Dunkirk and Havre, as reported in our June issue, a question was asked in the French Senate. Our readers will remember that the sheep were infected with scab and had come from South America. The Minister of Agriculture replied as follows: "We stop at the port of entry all living sheep coming from the Argentine Republic and we compel the importers to proceed at once to slaughter, at the port of arrival, all the sheep, not yet affected, that have been in contact with the diseased animals; we order quarantine and the treatment of the disease till a cure is effected and then the slaughter of the animals that have been infected; we likewise give strict orders for the disinfection, at the expense of the importers, of all places which the animals may have soiled by their presence. Equally rigorous measures are adopted for sheep that might find their way into France by land as well as by sea; thus not only do we prohibit the entrance of animals coming from foreign countries where disease has been reported, but we forbid even the transit through France in sealed trucks of sheep from infected

countries." If no more stringent measures have been taken, it is to avoid secret shipments and the giving of offence to neighbouring powers. It appears, however, that some of the Argentine sheep had, in spite of all this, got as far as Troyes (Aube).—*Ibid.*

IMMUNITY AGAINST FOOT-AND-MOUTH DISEASE BY USE OF IODIDE OF POTASH.—Professor Pick, of the University of Prague, writing to *La Clinica Veterinaria*, states that, with a view to the treatment of some syphilitic children, he arranged with a farmer to administer iodide of potash to two cows of his herd of sixty-eight, in order to employ the milk of these cows, which would thus be rendered medicinal. One cow got 12 grammes (185 grains) of iodide of potash daily for eight weeks on end; the other for ten weeks. Meantime, aphthous fever broke out in the establishment and two cows became ill. In order to shorten the course of the disease, the owner had the whole herd inoculated, including the two cows under treatment with iodide of potash. Although these two remained in the midst of the infected animals, they remained quite healthy. The effect of iodide of potash on cattle is, according to Pick, the same as on the human subject; after a few days all the symptoms of acute iodism appear—increased secretion by the nasal mucous membrane and flow of saliva; the appetite remains keen and thirst increases immensely. After a time the symptoms abate a little and remain moderate during the course of treatment. The secretion of milk increases to such an extent that cows which give two to three gallons per day give, under the iodide of potash treatment, as much, sometimes, as four gallons, because they absorb more liquid. The worth of these isolated observations is difficult to estimate, as we do not know how long the immunity exists, and whether the iodide of potash has a curative influence on aphthous fever, but the case is worth the attention of veterinarians.

EWE'S MILK IN THE TREATMENT OF DISEASE.—Dr. Auerbach, at a meeting of medical experts in Berlin, stated that ewe's milk, as taken by him from an East Frisian sheep, contained double the quantity of albumen and fat to be found in cow's milk, namely, five to six per cent. of albumen and six to eight per cent. of fat, while the saccharine content is mostly small. For the nourishment of sick persons with a milk thus composed there is this advantage to be claimed, that the stomach is less heavily loaded and the body is equally well nourished. In addition, the taste of the milk is sweet and pleasant. Ewe's milk has helped to bring about recovery from acute diseases, and it is useful in many chronic ailments, such as phthisis, nephritis, heart-disease, anæmia, chlorosis, etc.

A VISIT TO THE SULTAN'S STABLES.—Professor Cornevin, of Lyons, contributes an interesting paper to the *Journal de Lyon*, describing a visit to the royal stables at Constantinople. He says the stable, which is very extensive and well arranged, contains 204 horses, and is divided into two sections. One of these contains 60 carriage horses, exclusive of big horses, from Normandy, Holland, and North Germany, used for the state carriages. The other section contains 144 horses. Every province of the Empire and of the tributary states is represented, but the horses principally come from the district about Bagdad, Mossul, Damascus, and Upper Egypt. In spite of the differences of origin, colour, size, form of crupper, and tail, all the horses possess a common character, which enables us without any hesitation to classify them under one heading—the Arabic. Professor Cornevin found no horse which recalled the Berber breed. All the horses had the same broad, flat forehead, delicate features, big, prominent eyes, and bright but gentle look. The majority of the horses are dappled grey, others are bays or browns; there are very few black horses among them. The average height is 1·50 metres (about 15 hands). The mane is thin, but the tail, on the other hand, is very long and touches the ground; the hair in 95 per cent. is smooth

and soft, in the other 5 per cent. it is more or less curly. The legs are very thin but very shapely, and have strongly developed chestnuts. The croupers vary greatly; they are almost straight in the majority of the animals, and in others more or less sloping. All the horses are very tractable and obedient. It is a curious fact that some of them are maneless; these come from the neighbourhood of Merv, are mostly bays, seldomer black, and are well built animals; their manes are pulled out in their native country. The entire stud of the Sultan numbers at the present moment 540 animals, including 60 brood mares. The great majority of the animals are Arabs, but Professor Cornevin saw an Indian pony and a few Hungarian and Anglo-Norman mares, and several cross-breeds of Hungarian-Arabic parentage. Sixty per cent. of the mares are covered every year, and, in order to obviate sterility, dilatation of the mouth of the uterus is regularly practised. Gestation lasts from 11 months 6 days to 11 months 11 days; colts are carried 2 to 3 days longer than fillies. The foals are allowed to remain with their mothers for 6 months, and then they are amply supplied with good fodder, observations having shown that the average size of the Arab horse can best be kept at a high level by this means.

Notes and News.

Reported outbreak of disease in Nova Scotia.—Fears were entertained that the disease reported to have broken out in Nova Scotia was of a contagious type. The matter has been investigated by Professor McEachran, who has been able to trace the disease to a poisonous plant. From the meagre information at hand, I think the disease is biliary cirrhosis of the liver described in the April number of this Journal.

Epizootic Sore Mouth of Sheep.—This is the title of a paper published in the *American Journal of Comparative Medicine and Veterinary Archives*. The disease appears to attack the lambs about November, and lasts a month, being fatal to many, through the emaciation produced rendering the patient unable to withstand the rigours of winter. The disease is characterized by an eruption on the soft skin about the mouth, rarely, it appears, extending to the mucous membrane lining the oral cavity. The disease is stated to be contagious. The treatment consisted in the application of carbolic acid ointment. The disease is very general in the United States, and appears to affect a large proportion of the animals in a flock—indeed, it is looked upon as one of the things that lambs must have. The disease is almost identical with stomatitis, which is a well-recognized affection among sheep and lambs in this country. Here, however, the buccal membrane is also the seat of a vescular eruption. As pointed out by Mr. Walker, in last month's Veterinary Journal, stomatitis is a common affection of pups and young dogs. Here again the buccal membrane, as well as the skin outside, is attacked.

The veterinary medical societies of this country, who so frequently have to deplore the lack of attendance and the want of interest shown by their members in the proceedings, should take a hint from our enterprising American cousins and rouse the dormant enthusiasm of their subscribers by a "Clinical Entertainment":—"On Thursday, June 13th, 1895, the members of the California State Veterinary Medical Association assembled, by invitation of Dr. C. B. Orvis, at his infirmary at 258, Lafayette Street, Stockton, to participate in a clinical entertainment. The first operation on the programme was the reduction of a ventral hernia by Dr. H. A. Spencer, assisted by Dr. Archibald. The operation was the radical one for the cure of a hernia, and was performed under strictly antiseptic and aseptic rules. The next operation was performed by Dr. Lemke. This was the case of an old, long-standing fracture of the scapula at its upper third, from which a

fistula resulted, which necessitated the trephining of the scapula. Other operations of minor importance followed, closing the entertainment, which was voted an entire success by the members present.—R. A. ARCHIBALD, *Secretary.*"

DOG SHOWS.—In an interesting disquisition on the development of dog shows since the first exhibition at Newcastle-on-Tyne in 1859, our esteemed contemporary, *Land and Water*, goes on to enumerate the gradual rising of these shows at Birmingham (1859), London, Leeds, and Manchester (1862), after which date the Prince of Wales became interested in the fancy, and the Kennel Club was formed in 1874. Popularity of these experiments involved the necessity of buildings for feeding and benching these canine pets. The principal difficulties lay in the direction of the feeding and benching of the dogs. Spratt's Patent, therefore, seeing that there was an opening for the extension of their business, and at the same time benefitting the class of animals, for the wants of which they were specially catering, commenced to undertake the contracts for the supply of food to the competitors and with the happiest results. Instead of the horrible sloppy messes of half-cooked meal, in which lumps of extra dubious looking fat and flesh were present, the dogs are now dieted on good sound biscuits, in the composition of which meat of the best quality occupies a considerable share. Spratt's Patent are now entrusted with the feeding, in fact they are catering for the wants of the canine competitors at all the leading shows, and no other firm has ever fed the dogs at any of the Kennel Club exhibitions. The institution of their benches and partitions marks a great advance in dog shows, for just as the adoption by committees of Spratt's patent cakes convinced owners that their favourites would be well fed, so did the appearance of the new benching assure them that the animal would be more comfortable.

SPECIAL MEETING OF THE NEW YORK STATE VETERINARY MEDICAL SOCIETY.—At the special meeting of the New York State Veterinary Medical Society, held in the lecture room of the New York College of Veterinary Surgeons, New York City, on June 11th, 1895, the roll call showed a large number of veterinary surgeons present. The reading of the minutes of the previous meeting was dispensed with. The President, Dr. R. S. Huidekoper, explained in a few remarks the reason for calling this special meeting. He said that it was in order to comply with a clause in the bill which had recently become a law by being signed by the Governor, wherein the New York State Veterinary Medical Society are required to nominate ten members of their society, whose names are to be transmitted to the Board of Regents, who, according to the law, are to appoint five members out of the ten submitted to them: the five members appointed to act as a State Board of Veterinary Examiners, and to hold office for five years. The following are the names of the ten members who were chosen by ballot of the members present to be submitted to the Board of Regents for them to make their appointments from: Drs. R. S. Huidekoper, Nelson P. Hinkley, Claude D. Morris, William Henry Kelly, John Wende, W. L. Baker, Arthur O'Shea, John A. Bell. H. D. Hanson, and Professor James Law. There was also a resolution offered giving notice to the Society that at the next annual meeting there would be a resolution offered to amend the by-laws so as to read that all legally registered veterinarians in the State of New York be eligible to present their applications to become members of the New York State Veterinary Medical Society. This resolution was accepted and ordered spread on the minutes. The meeting then adjourned until the next annual meeting, which will be held in the lecture room of the New York College of Veterinary Surgeons, No. 154, East 57th Street, New York City, September 5th and 6th, 1895. NELSON P. HINKLEY, *Secretary.—American Veterinary Review, August*, 1895.

CANADIAN CATTLE DISEASE.—Scotch farmers and others interested in the Canadian cattle trade are meditating an appeal to the new Minister of

Agriculture. The old Minister proved immovable on the subject. To the last he adhered to the policy of keeping our ports closed against the industry. He may plead, of course, that he acted under the advice of his veterinary advisers, but he must, at the same time, be aware that the closure edict met with little support from experts outside of the Department. If Lord Burghclere—to give Mr. Herbert Gardner his new title—and the officials of the Board were on one side, they had ranged on the other such eminent veterinarians as Principal Williams, Dr. Sims Woodhead, Mr. Hunting, and M. Nocard. They had also the strongest possible evidence from the Dominion authorities that not a single case of pleuro-pneumonia had been discovered among their herds. In these circumstances the Board of Agriculture would have been amply justified in adopting one of two courses. They might either have revoked the order which put a stop to an extensive and rapidly increasing industry, or they might have taken steps for carrying out an independent inquiry into the whole matter. With the view of facilitating the latter, the Canadian Government offered to bear the cost of an investigation on the spot as to the condition of their cattle. But the Department did neither the one thing nor the other. They persisted in keeping the doors of the ports shut. Their reason for doing so was of a singularly weak kind. It simply amounted to this, that out of more than a million cattle shipped from the Dominion since 1880 to 1892, and out of 200,000 slaughtered at the ports of landing after the issue of the Order in Council, about a dozen animals were found suffering from lesions in the lungs of a particular type alleged by the Board to be pleuro-pneumonia, but declared by outside experts to be not contagious, but only "transit" pneumonia. It may be that after taking up such a positive attitude on the question, the late Minister of Agriculture found it difficult to climb down. Mr. Walter Long, happily, is in a very different position. He is committed to nothing, and can look with a perfectly unbiassed mind on the communication about to be submitted to him. It is easy enough to form some idea regarding the nature of that communication. First of all, the advocates of the removal of the restriction will be able to argue that its continuance is not warranted by any cases of genuine pleuro found amongst the cattle recently landed from Canada. Secondly, they can point to the fact that the Belgian Government are proposing to re-open their ports to the trade under inspection. And lastly, they can submit the latest report on the subject prepared by the Dominion Minister of Agriculture. Mr. Angers' report is a document of great ability. It sets out with the obvious truism that the interests connected with the health of animals in Canada are of vastly greater magnitude than any that can possibly attach to the conditions of any market, however valuable, for surplus stock. The value of neat cattle and their products in Canada, as established by the census of 1891, reached the high figure of close on one hundred and forty million dollars, while the development of increase since the date of enumeration has been very rapid. All the administrators of the Canadian Department in matters pertaining to the health of animals have this great industry and how to protect it from diminution by the entrance of disease always in view. Such a circumstance, as Mr. Angers argues, may be accepted as a reason why in any controversies relating to cattle disease, neither he nor his officers are likely to be misled by the consideration of obtaining an improvement of conditions in a market for surplus live stock. He then proceeds to summarise the whole "case" for the Dominion. As to the persistent and reiterated demand for information as to the existence of pleuro-pneumonia, Mr. Angers says this cannot be done for the very simple reason that no such disease can be found in Canada. The inference of the British Board of Agriculture, that the disease found in the few animals landed at Liverpool and other ports must have been contracted in

Canada before embarkation, is declared to be unsupported by evidence. On the contrary, there is nothing to show that it might not be contracted in the course of transit. According to the expert testimony, the lesions were of recent origin. In all the many thousands of Canadian animals slaughtered in the United Kingdom not a single case of old or encysted pleuro has been found, a condition which would have been impossible if the disease, as alleged, prevailed in the Dominion. Finally Mr. Angers showed the absurdity of the conclusion reached by the Board of Agriculture that serious disease exists in Canada, and that it is contagious pleuro of a special type, but not different in its "contagious and fatal effects" from the commonly accepted type known in Europe and elsewhere. "How," he exclaims, "can this be, when the disease cannot be found in Canada, and when it has never, in any part of the Dominion been ever heard of?" The conclusion he reaches is that the continuance of the restrictive order requiring the slaughter of Canadian cattle at the port of arrival, for the reason of the alleged presence of the disease of pleuro in Canada is not and cannot be supported by any proof of its existence. "If you doubt my word," Mr. Angers asks in effect, "come and see for yourselves." He repeats the offer made in 1892 that the Dominion Government will gladly pay the expenses of any inspection made in Canada by representatives of the British Board of Agriculture. From this report alone any deputation that may be appointed to wait on the new Minister will be able to cull arguments of the most forcible nature. It may be said that Mr. Long, like his predecessor in office, can act alone on the advice of his permanent officials, and that if that is still adverse to the opening of the ports, the deputation will simply be bowed to the door. But such a course of action on the part of the new Minister is very doubtful. The probabilities are that he will decide this matter for himself. He has in all likelihood discovered before now that a good deal of dissatisfaction exists among the veterinary profession regarding the present staff. A Committee of the Royal College of Veterinary Surgeons has recently drawn up a report on the subject, in which some very plain language is used. Some of the changes made on the retirement of Professor Brown from the Directorship of the Veterinary Department of the Board are declared to be a reflection upon the capacity of the whole body of the profession, and as one calculated to destroy the efficiency of the Department. The Committee goes on to protest against a so-called re-organisation which "removes from the hands of a professional expert the control and direction of a department created for, and solely concerned with, the suppression of disease amongst live stock." As to the change of the name of the department from "Veterinary" to "Animals," the Committee can only explain it on the supposition that the interests of the stock-owner have been overlooked and the interests of the veterinary profession ignored. There seems to be in this report more material on which the deputation may work. The Board of Agriculture, like the Board of Trade, appears to stand in need of reform. It remains to be seen whether Mr. Long intends to act the part of reformer.—*Glasgow Herald.*—In the House of Commons on August 22nd, Mr. White asked the President of the Board of Agriculture, whether he will lay upon the table the official reports of the alleged recent cases of pleuro-pneumonia in two Canadian cattle recently landed at Deptford; whether he was aware that a meeting was held in Glasgow on Friday last at which Principal Williams, of the New Veterinary College, Edinburgh, exhibited limelight views of sections of the lungs of cattle, showing the difference between healthy lungs and those affected by contagious pleuro-pneumonia and by bronchial pneumonia, and demonstrated that the lungs of suspected Canadian cattle were different in appearance from the diseased sections thrown on the screen; and whether, in view of the conflict of the opinions of the Canadian and many British experts with those of the

experts of the Board of Agriculture, and in view of the assertion of the Dominion Government that contagious pleuro-pneumonia has never been known, and cannot be found or any trace of it discovered in any part of the Dominion, he will accept the invitation of the Dominion Government to send one or more veterinarians to Canada at its expense to elucidate the facts.—Mr. Long said that the report made to him by the chief veterinary officer of his department was a very short one, and could not be conveniently presented as a separate paper, but he would be very glad to supply the hon. member with a copy, and allow him to make any use of it he thought desirable. He had seen the report of the meeting to which the question referred, and he was aware of the views Principal Williams held on the subject. The conclusion to which his predecessor (Mr. Gardner) arrived, however, appeared to him fully justified. It did not seem to him likely that the despatch of experts to Canada would be of assistance, his action being based upon the actual detection of disease in the cattle landed in this country. Mr. White asked whether, in view of the advance of veterinary science by practical experiments, the Board of Agriculture were prepared to carry out any practical experiments when any suspected cattle were landed in this country. —Mr. Long said he did not think there was any necessity for special experiments. The advisers of the Board of Agriculture were perfectly satisfied with the result of their examination, and the Board had confidence in them. The Board did not, therefore, think they were called upon to make further experiments.—Mr. Kilbride asked if it was possible that cattle leaving Canada in a healthy state might contract peuro-pneumonia in transit.—Mr. Long said he was not quite sure that that was an accurate statement, but undoubtedly cattle might leave Canada without showing any evidence of pleuro-pneumonia, and no doubt the disease might be developed in the course of the journey, and be discovered when the animals were landed here. The duty of the British Government was simply to see that no diseased cattle were landed here.—[From the answer to Mr. White's question it will be gathered that the new Minister of Agriculture intends to follow the footsteps of his predecessors, not only to exclude Canadian cattle, but to discourage practical experiments to determine the contagious or non-contagious nature of the American lung disease. The statement made by Mr Long, that cattle from a non-infected country, as Canada is proved to be, might develop contagious pleuro during the course of the journey, is so absurd that one cannot help smiling at it.]

EDITORIAL NOTE.

Owing to pressure on our space this month, we are unable to print several important communications. We hope to produce these in our October number.

Communications, Books, Journals, etc., Received.

Russell's "Scientific Horse Shoeing" the Robert Clarke Company, Cincinnati, U.S.A.; Report of the Director of the Colonial Bacteriological Institute for 1894, Cape of Good Hope; "Agricultural Journal," Cape Colony; The "American Journal of Veterinary Medicine and Archives;" "Modern Medicine and Bacteriological Review;" "De l'unification de la nomenclature en anatomie Veterinaire;" Rapport de Mr. le Dr. P. Martin professeur a l'ecole veterin de Zurich; I. T. Duncan, M.D.V.S., professor of anatomy, Ontario Veterinary College; C. Drabble, M.R.C.V.S., Bradford; Joseph H. Carter, F.R.C.V.S., Burnley; Colonel Lambert, C.B., Army Veterinary Department; Veterinary Department, Privy Council Office, Dublin Castle; R. Rutherford, F.R.C.V.S., Edinburgh; Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); Annales de Médecine Véterinaire (Brussels); L'Echo Vétérinaire (Liége); Berliner Thierärztliche Wochenschrift (Berlin); Bericht über das Veterinärwesen im Königreiche Sachsen für (Dresden).